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THE COMPLETE SHOT

BY

G. T. TEASDALE-BUCKELL

REVISED BY

A. F. RANDALL

WITH FORTY-THREE PLATES

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PREFACE TO FIFTH EDITION

IT can hardly be doubted that when the late Teasdale-Buckell selected a title for this, his book, he had in mind Isaak Walton's *Compleat Angler*, but the difference between the two is that whereas Walton dealt not with the technique, but with the philosophy of fishing, Buckell dealt with the practical art of shooting, including other things appertaining thereto.

No one would think of revising the *Compleat Angler*, which, like *Plato's Republic*, is numbered amongst the classics.

Many changes have been made, in the production of guns, powders, cartridges, and in the breed of sporting dogs, since Buckell penned his first edition, yet the fundamental principles of *The Complete Shot* remain unalterable, and only minor matters needed revision.

Buckell was an enthusiastic, all-round sportsman; a prolific writer on sporting subjects such as Shooting, Sporting Dogs, Game Rearing, Pigeon Shooting, and other topics.

As live pigeon shooting, to which he devoted a chapter, is now illegal, the whole has been eliminated and a chapter substituted on "clay" or inanimate bird shooting, which, in his day, was in its infancy. But it is easy to gather from his remarks that he was not greatly enamoured of it.

Again smokeless—or nitro—powders were at the same time in a state of evolution, as his references to black powders, which are only now used for special purposes, will show.

The Try-Gun as a practical weapon, that is, a weapon which could be comfortably used in any ordinary day's sport, had not been perfected, and over and under guns had not made their appearance in the form now presented to sportsmen.

Illustrations are used and references made to them in the revised parts of *The Complete Shot.*

Sections will also be found on Modern Shooting Schools and Cartridge Loading Machines.

The revision of an established book is a much more difficult task than writing a new one, but after careful re-reading I have come to the conclusion to alter but little of the original body, because by doing so I might eliminate that valuable knowledge of the past upon which all progress is based. Past experience compared with modern ideas serve like milestones, too valuable to be sacrificed, because they mark the distance we have travelled—sometimes backwards, sometimes forward. I have therefore confined myself to a course of addition rather than that of ruthless excision, and I feel that, by so doing, *The Complete Shot* will be more complete than it was before. Truly nothing is complete nor final; if it were, progress, the incentive of life, would cease and human endeavour speak in vain.

The only section of work which has been subjected to considerable revision is that relating to "The Choice of a Gun." This portion has been cut down and added to, and even so, that of the old which remains will still be rather too profound for the beginners, but will no doubt be highly prized by the accomplished shot who made his selection a generation ago.

The latter remarks apply particularly to Mr. Buckell's article on Patterns, which one might be inclined to regard as a wilderness of words, since the conclusions finally drawn, could have been arrived at without so much redundancy. However, as they have been acceptable in their present form in four previous editions, I have made no attempt at abbreviation, although the pruning-knife might possibly have been used to advantage.

The Boring of a gun, whilst being the principal factor in the production of regular patterns and killing power, is not the sole factor.

The proper selection of the load and the accurate loading of the cartridges, are far from being an inconsiderable item in this ever interesting subject.

A. F. RANDALL

London, *March 4th*, 1924

PREFACE

WHEN the publishers asked me to write a book upon Shooting and its interest, I at first doubted whether I knew enough of the matter to fill a book of much size without repeating all the traditional lore that is to be found in every unread text-book, but I had no sooner undertaken the business than I came to a conclusion that has since been confirmed, that to deal as best I could, with the kind help of many sportsmen, with the controversial subjects would have taken the whole space at my disposal for any one of them. Consequently, ever and again I have had to decide what to eliminate, and I have tried to leave out that which most people know already, and to deal as best I can in short space with questions that are now more or less under discussion, and consequently those that game preservers and shooters in this and other countries are thinking about. It has been very difficult to draw a line between the controversial and current subjects and the unchallenged facts which have been too often repeated already, but that this is the right principle is, I think, obvious from the position that the opposite course would involve. What is meant can be best explained by glancing at a few traditional survivals in gunnery and shooting, and its accompanying un-natural history, which, along with many others, would occupy space if one were to attempt to deal with all the accepted, as well as the repudiated, statements upon them. Nobody wants to be told that he should put the powder into a cartridge-case before the shot, but to begin at the

beginning would involve the necessity of giving that and other puerile information. Nobody would be the better for a learned chapter on gun actions. In the first place, these actions are no longer patents, they are open to anyone who likes to use them, and consequently the days when one selected a gun-maker because his patent action was conceived to be the better, are long gone by. The reason is that each gun-maker can be trusted to use the best principle when he has a choice of them all, or at least the best available for the money to be expended upon its making in the gun. Ejectors are nearly in the same position; but single triggers are not. I was so fortunate as to make a discovery in regard to single triggers that is now acknowledged to be of great assistance to the gun trade; the want of it had for a hundred years been the stumbling-block to the patent single triggers that had begun to trouble gun-makers in the time of the celebrated Colonel Thornton. That is referred to in its proper chapter, because single triggers now occupy the place that formerly actions held, and at a later date ejector systems usurped, in assisting to the selection of a gun-maker.

To begin at the beginning in the repudiation of frequently accepted fallacy possibly would not compel a reference to the sometime beliefs that hares change their sex; that skylarks fall into snakes' mouths after their skyward song—a statement that troubled Mr. Samuel Pepys, who, as Secretary to the Admiralty under two protectors and two monarchs, and as a member of the Royal Society, should have been in a position to get the best information. Nor would such a beginning involve the repudiation of the belief once held that bernicle geese turned into "bernacle" molluscs, or *vice versâ*. But it would oblige an author to enter into repudiation of the oft-stated belief that nitro powder is quicker than black powder, although big and heavily charged caps have to be employed for the nitro, whereas the small were amply sufficient for black powder. One would also be obliged to point out that the oft-repeated prophecy, that the smallest stock of grouse bred the better August crop, has been doomed to disaster

COL. THORNTON'S PLUTO (BLACK) AND JUNO, BY GILPIN, SHOWING WHOLE-COLOURED POINTERS SIMILAR IN FORMATION TO THOSE OF SUTTON SCARSDALE TO-DAY

always, and that precisely the reverse is true. However, there are still people who by what they say must be judged to hold to the unproved proposition that the stones breed grouse.

It would be necessary also to point out that some parrot cries are a hundred years old and at least forty years out of date, but are still repeated as if they were original and true. Some of these are that pointers have better noses than setters, and also require less water; that cheese affects dogs' noses (sanitation by means of carbolic acid does so, but cheese is harmless enough); that Irish setters have more stamina and pace than any others. The latter statement I have seen disproved for forty years at the field trials in this country, and the former has always failed to find corroboration at the champion stamina trials in America. I have had great chances of forming an accurate opinion, as I entered and ran dogs at the English championship trials over thirty-six years ago, and I am the only one who has ever judged at the champion trials of both England and America.

It would be necessary also to repudiate the mistake that "foot scent" is something exuding from the pad of an animal and left upon the ground by the contact of the feet. It would be necessary to affirm that fat from the adder is not the best cure for the poison when dog or man is bitten, but that raw whisky taken inwardly in large doses is; and as dogs will sometimes point these vipers, it might be well to affirm that these creatures do not swallow their young, as is commonly supposed. It would be necessary also to state that when partridges "tower" they are not necessarily, but only sometimes, hit in the lungs, but have often received a rap on the head just not enough to render them totally unconscious; and a case has lately been reported where two unshot-at partridges in one covey "towered" and fell, and were caught alive, grew stronger, and upon one of them being killed it was found to be badly attacked by enteritis, and not by lung disease. And consequently the myth about "towered" partridges always falling dead and on their backs does not require dealing with, as might have been

the case a quarter of a century ago, when nevertheless the phenomenon was only misunderstood in the laboratory, and not in the field of sport.

It is hardly necessary to assert that "pheasant disease" as commonly seen in the rearing-fields is not fowl enteritis, as it is so often said to be, because the foster-mothers are hardly ever affected by any illness, when their chicks are dying by hundreds of *the* disease. *The* pheasant disease has never been subjected to pathological examination and investigation.

To start at the beginning would make it necessary to state that the "muff 'cock," or the bigger woodcock, that comes in a separate migration, is not the hen of the smaller birds, and that distinction can only be made between the sexes by internal examination of the organs. It might be necessary in similar circumstances to say that woodcock and snipe do not live on suction, as is often believed even now; that nightjars and hedgehogs neither suck the milk of goats nor cows; that foxes do not prefer rats and beetles to partridges and pheasants; that swallows do not hibernate at the bottom of ponds; that badgers do not prefer young roots to young rabbits; that ptarmigan and woodcock are not mute, and that the former do not live on either stones or heather; that badgers can run elsewhere than along the sides of a hill, and that they are not compelled, by having the legs on one side shorter than on the other, to always take this curious course, which would involve them in the difficulty of having to entirely encircle a hill before getting back to their holes; nevertheless, this faith is still held in some parts of the country, just as it is said that the heather bleating of the snipe is a vocal sound, whereas it is often made simultaneously with the vocal sound.

I have tried to avoid dealing with any such things as these, which may be supposed to come within the region of common knowledge of any beginner in shooting, but another point has troubled me more. I have written a good deal for the press. Articles of mine have appeared in *The Times*, *The Morning Post*, *The Standard*, *The Daily Telegraph*, *The County Gentleman*, *Baily's Magazine*, *The Sporting and Dramatic*, *The Badminton*

Magazine, *Country Life*, *The Field*, *The Sportsman*, *The National Review*, *The Fortnightly Review*, *The Monthly Review*, and elsewhere, and I am afraid that I have unconsciously repeated the ideas running through some of these articles, without acknowledgment to the various editors.

As Colonel Hawker went to school in gunnery to Joe Manton, so did Joe Manton go to school to Hawker in the matter of sport. But we have changed. That those who make guns can best teach how to make guns I do not doubt for a moment; that when they write books on the making of guns those books are regarded as an indirect advertisement is inevitable, but they are none the worse for that, if readers know how to read between the lines, and it is not necessary to go to a shooting school to do that. But when gun-makers add to their business by means of books upon sport and by "shooting schools," they are turning the tables on us. To that I have no objection. But when it is asserted that shooting schools teach more than the sport itself, as has lately been done, then I think it is time to protest that even if they could teach shooting at game as well as game teaches it (which is absurd), that even then they cannot teach sportsmanship, of which woodcraft is one part and the spirit of sport and fellowship another.

But the greatest value of sportsmanship is, after all, that idle man should be the more healthy an animal for his idleness. Consequently, when shooting parties are made an excuse for more smoke and later nights than usual, even if the shooting is not spoiled next day, less enjoyment of life follows, and lethargically apparent becomes the missing of that perfect dream of health, that reaction after great exertion ought to bring to those who have ever felt it.

It is often said that big bags have ruined the sporting spirit. That is not so: big bags are necessary proofs that the science of preservation of game is on the right lines, and their publication is also necessary on these grounds. At the same time, it is a fact that hard walking is not appreciated as much as it was thirty years ago, and ladies can now take just as forward a place in the shooting of game and deer as men can or do. This is

not all because ladies are better trained physically, but because sports have been made much easier, than formerly they were. Bridle-paths enable ponies to traverse the deer forests with ladies on their backs, and where that can be done deer stalking is not quite what it was when a Highland laird declared that he saw no use in protecting the deer, since nobody could do them much harm. But the wonder to me is not that we do not like great exertion, but that we ever did like it for itself. But then I speak as a man in years, and one who has in the foolishness of youth killed a stag and carried home his head, cut low down, for sixteen miles, rather than wait for the tardy ponies to bring it in with the carcase.

I suspect that a change of ideas will take place when it is discovered that driven-game shooting can, more than any other, be learnt at the shooting schools, and that when the trick is known it becomes the easiest kind of shot. If it is true that the schools can teach it, then everybody will learn it, and what is common property will become as unfashionable as it is the reverse at present. I believe that half the difficulty in the driven bird is in thinking it is difficult. The fastest bird at 30 yards range one is likely to meet with in a whole season does not require a swing of the muzzle faster than, or much more than half as fast as, a man can walk. What is difficult in driven game is shooting often, the swerve of the game, the changes of pace and angle of different birds in quick succession, but distinctly not the pace. Before I had ever seen a grouse butt, I remember sitting down to watch another party of shooters on a distant hill, more than half a mile up wind of where I sat to watch. I saw their dogs point, and a single bird rise, which, with many a switchback as it came, I watched traverse the whole distance between us, and I killed it as I sat. That was my first driven grouse, but it is not by any means why I say that driven game offers the easiest kind of shooting; it is because the average of kills to cartridges are so much better than they are in other kinds of shooting. Take, for instance, double rises at pigeons, which are easy compared with double rises at October grouse, and it

will be noted that the crack pigeon shots do not generally kill even their first double rise at 25 yards range, and that four or five double rise kills are nearly always good enough to win, as also very often is a single double rise with both birds killed. Very moderate grouse drivers can do better than that, and pheasants that are not very high are slain in much greater proportion. The fact is that all shooting is extremely difficult if one attempts to satisfy the most severe critic of all, namely the man who shoots. But at my age I would much rather think myself fit to do a day's hard walking than a day's hard shooting. I think there are a good many people of that opinion, otherwise dog moors would not make more rent per brace than the Yorkshire driving moors, but they do. The trouble is that places where birds will lie to dogs are limited, and it is childish to drive packs of birds away for the sake of thinking one is shooting over dogs when one is not shooting at all, but only doing mischief. Personally, I would not try to shoot over good dogs on Yorkshire grouse. Bad ones would not matter; but then they would give me no pleasure.

When it was a literary fashion to abuse covert shooting as butchery and grouse driving as no sport, it was not done by sportsmen of the other school; and later, when the literary genius of the period was turned in the opposite direction, and we were constantly being told that a walk with a gun and dog was pleasant but no sport, it was only done by those who were a little afraid of being out of the fashion. I have been so unfashionable as to defend both by turns, and I have always been of opinion that any sport which appeared to be growing unpopular was worthy of the little support I could give it. It will probably greatly surprise those who dare not, with imaginative pens, shoot at the tail of a bird, to be told that Mr. R. H. Rimington Wilson recently informed me, that if he were to back himself to kill a number of shots consecutively he would select driven birds in preference to walked-up game; and besides, that he preferred to be let loose on a snipe bog to his own, or any other, big driving days. My opinion has

been that you can always make any sort of shooting a little more difficult than your own performance can satisfactorily accomplish to the gratification of your own most critical sense.

Driving game and big bags are often, but not always, acts of game preserving.

On this subject I had written a chapter, but fearing that I had not done that view justice, after a conversation I had with Captain Tomasson, who has Hunthill and is the most successful Scotch grouse preserver by the all driving method, I asked him to criticise some articles I had previously written in the *Field*, the sense of which I have tried to express again in the following pages. He very kindly did so, or rather stated the case for the Highlands, which I have substituted for mine. It only differs in one respect from the sense of my own suppressed chapter, namely, it does not remark on the difficulty of explaining why, if recent Scotch driving has partly defeated disease, even more Yorkshire driving, prior to 1873, nevertheless preceded the worst and most general Scotch and English disease ever known. However, everyone will argue for himself: I can only pretend to present a mass of facts to assist a judgment, but not a quarter of those I should like to give have I room for, and I regret that Captain Tomasson is even more restricted by space.

I have shot over spaniels in teams and as single dogs, but as I consider that I know less of them than Mr. Eversfield, who probably knows more than anyone else, I asked him to read and criticise my article, which he promised to do. But in returning it he has professed himself unable to criticise, and very kindly says that he likes it all, so I leave it, being thereby assured that it cannot be very wrong.

There is one subject connected with shooting, or the ethics of shooting, about which there is much more to be said than ever has been attempted, namely, that partridge preservers are now, and will be more in the future, indebted to the fox for their sport. This may appear a wild paradox, but before I am condemned for it I would, in the interests of the gun, ask those who disagree to read my chapters on partridge

preserving, where, if they still disagree, they will find a partridge success described that will amply repay their good nature, unless they know a plan by which season's partridge bags can be doubled, doubled again, and then again, in three consecutive years.

On the subject of dogs, I may say that thirty to thirty-five years ago I recommended to some American sportsmen three different sorts of setters. Either two of them had bred well together in England. These have been crossed together ever since in America, and no other cross has been admitted to the Stud Book devoted to them. They have been a revelation in the science of breeding domestic animals, for, in spite of all the in-breeding represented there, I was enabled to select a puppy in 1904 that in Captain Heywood Lonsdale's hands has beaten all the English pointers and setters at field trials in 1906. I have more particularly referred to this in a chapter on English setters, and in another on strenuous dogs and sport in America.

I have already tendered my thanks, but I should like publicly to repeat my indebtedness, to those who have lent me the best working dogs in England for models, or have sent me photographs of them and other pictures. These include Mr. Eric Parker, Editor of *The County Gentleman*, Mr. W. Arkwright, the Hon. Holland Hibbert, Mr. Herbert Mitchell, Mr. C. C. Eversfield, Mr. A. T. Williams, Captain H. Heywood Lonsdale, Mr. B. J. Warwick, the Editor of *Baily*, Mr. Allan Brown, and the President of the world's oldest established, and National, Field Trial Society, namely Col. C. J. Cotes, of Pitchford Hall, who has sent me some photographs of his, and his late father's, Woodcote pointers and retrievers, including an original importation of 1832, and founder of his present breed of the latter race, and in doing this he has been kind enough to say :—

"I have always considered you to know more about the breaking and breeding of setters than any man living, and that it was entirely through you that the apex of setter breed-

ing was reached about twenty-five years ago, and through your recommendation I obtained the eight setters in 1881 that founded my present breed."

I am glad to be able to quote this, because my name is little known to younger shooters, although I write many, preferably unsigned, articles upon rural sports and other matters.

G. T. T.-B.

PREFACE TO THIRD EDITION

I HAVE every reason to be pleased with the reception of *The Complete Shot.* The Press has been extremely kind, and shooters have been kinder still. Some of the most experienced of big-bag men, gun-dog men, and those who have made ammunition a life study, have written words of highly valued praise, some of which I propose to quote shortly, as the best possible warrant to younger shooters that the following pages will not mislead on subjects that are too frequently treated in an intricate manner.

Criticisms to reply to are very few, and mistakes to correct there have been indicated none. For these reasons I have in this new edition only added a few lines at the end of chapters when something of importance has occurred since October 15th, 1906, when the MS. of the first edition was handed to the publishers. They then stood godfathers, and named this child, in a way that I thought too much challenged criticism of an effort that had to be condensed into less than four hundred pages.

That all the facts recorded are not new, has been made a complaint in one review only. I should have felt less confidence in selecting them for confirming my own experience and opinions if they had all been new. I have not quoted records merely as such, for I hold that each record teaches something, provided it is read rightly and assimilated. It is always better to base arguments on known facts than to base new views on new data, not yet generally assimilated.

The *Times* was kind enough to award me lots of space to a review that did not rise to the general journalistic level of that great paper. It missed the level of literature as much as it did that of the observing sportsman. Elsewhere the same remarks might have passed without reply, but the *Times* in stress and storm is still the *Times*, and by far the greatest paper in the world. Hence even its trivial blunder on a trivial subject becomes important. But where it found fault it was itself grotesquely wrong. Nor to preservers is the point—whether game birds withhold their scent under falcons—as unimportant as the casual reviewer may believe. If the falcon makes birds secretive and induces them to be ever ready to crouch, and thus withhold their scent, then the first appearance of any danger, even from the scent-hunting, earth-crawling vermin, is also frequently associated with this retention of scent, which becomes thereby nature's protection of the birds against vermin. The reviewer says: "Nor do we quite follow our author when he says that game birds give out no scent 'when crouching fearful under a falcon,' or how could the falconer's pointer locate, as he will, covey after covey when the hawk is 'waiting on'?" It would have been more to the point to ask how it happens that the pointer *sometimes* points under such conditions, because very occasionally it has been done, but that was never the usual method. Nearly all falconers threw off their hawks after the point had been established, to "wait on" the flush. I know one shooter of a party that has killed 50 brace of grouse under the artificial kite, and it would have been much more pertinent to have asked how this was done if the game birds withhold their scent. The truth is that the *Times* reviewer, like many a sportsman, has never taken the trouble to investigate the difference between a point at foot scent and one at body scent. I have taken a great deal of time and trouble. When simultaneously I put up four kites at the four corners of a field, I found that any good dog could get blunder-

ing, doubtful points at the foot scent the birds had made before seeing the kites, but that, by waiting twenty minutes, or half an hour, for this foot scent to evaporate, no dog, however good, could point either the game or the foot scent. Precisely the same thing occurs when a falcon elects to perch in a tree and there is game lying near. The explanation of the points under falcon, or artificial kite, is, then, I submit, always foot scent made before the birds became scared, and crouched with feathers tight pressed and making their wearers look only half the natural size. *Country Life* makes precisely the same mistakes as the *Times*, and is less appreciative, even when it agrees; but then *Country Life* has its own Shooting Book, and possibly thinks it politic to pose a little. A similar remark applies to the *Field*, which, in order to "save its face," gives as reasons for not answering my criticism, that my articles put words which they have never used into the mouths of others, and are written under a pseudonym which nevertheless, it says, does *not* disguise my identity. The *Field* is wrong: I never quote incorrectly.

Its shooting pages have naturally made me the ultra-egotist it says that I am, but then who that those pages reads can truthfully say "I know no more, and must perforce believe"? Surely it would not scorn its own handiworks! Was it lest it should be paradoxical, and pose as not replying to criticism of mine over my own name, that its reviewer gave me a pseudonym, which I repudiate, instead of printing in its review the name upon this title page? However, having regard to the high appreciation it reserves for its trade advertisers' trade books, and the necessity for cutting its coat according to its cloth, I am content with the phrase "We must do him the justice to say that he has written a distinctly good book," almost as much as I am with the ultra-curious contradiction that an ultra-egotist can always by preference write under a pseudonym. Then, "per contra," as they say in the trade papers, the *Field* often has bandied pained words with my pseudonym. Consequently

I feel that to have given me simple justice would have been to compromise beyond my wishes one whom I understand is a most genial Editor, and I know to be a courteous man.

It is only a coincidence, of course, that my criticism of work in the *Field* should be followed by changes of writers there. My remarks on game diseases, much as they appear here, were answered, but not rebutted, by the admission that the since retired or pensioned-off Mr. Tegetmeier was the writer responsible. My first-edition criticism of Mr. Millard's work in the *Field* still stands in these pages for reference and for proof that some people can read between the lines. Since then, we have had the great Essex pheasant egg stealing, and receiving, cases, in which the East Anglian Game Protection Society prosecuted Stride and Millard successfully. These, and other coincidences, possibly make it the less essential for the Editor of the *Field* always to enter into arguments with a pseudonym, and they would not have been referred to here, had not the inexact excuse for not attending to criticism been capable of Natural and historical Winstonian classification as a species of *Terminological inexactitude.*

At a banquet in New York, Mark Twain said that he was greatly pleased with the compliments paid to him in England, and that which struck him most was that they were all so extraordinarily just. I suppose the recipients of compliments generally "feel that away," but I have little experience: the newspapers have given my work favourable reviews, but to me personally no compliments, with one exception which, if not extraordinarily just," is at least just what I wish I could feel "extraordinarily just," so that I quote it from *Vanity Fair*, as a better exposition of my intention than I could write. It says:—

"Latterly, the preface has come to be regarded as superfluous, because so few people, other than reviewers in a hurry,

trouble themselves to read it. This is a pity, because even with the book of ordinary calibre, the author's standpoint and purpose are ascertained; or if the book be a bad one, one may thus read his excuse at least. But when the book happens to be the best of its kind extant, the very last word on the subject, the reading of the preface, carefully as any of the regular chapters, becomes the essential duty of both reviewer and ordinary reader. Particularly is this true in the present instance: for not only does the above estimate do no more than the barest justice to the merits of this work, but one remembers few books in which the preface so clearly mirrored not only the author's standpoint, but the man himself. Those who have read Mr. Teasdale-Buckell's previous books on shooting, and his countless articles in the sporting press on both sides of the Atlantic, on this and kindred subjects, which is tantamount to saying every English speaking sportsman, will have no difficulty in accepting him as the first authority in the world on these matters; and as one who has the rare faculty of expressing his arguments so convincingly that they become finalities, without being in the least dogmatic. That is the charm of his writing at all times, as well as its conviction. You are allowed every opportunity to differ—if you choose to stamp yourself as a sciolist or an ignoramus by so doing. But those who have been privileged to be his colleagues know him not only in the above aspect, but also as a man of the highest attainments in general science, and in more than one form of art; as a charming companion and as a sportsman in the truest sense of that much-misapplied word. Such is the aspect of Mr. Teasdale-Buckell and his work from the standpoint of others. His own is characteristically expressed in the first sentence of this preface: 'I at first doubted whether I knew enough of the matter to fill a book of much size without repeating all the traditional lore. . . .' That doubt, however, will not be in the least apparent in any line of the three hundred and seventy-nine subsequent pages of his latest work; indeed, as he is compelled to admit later on, elimination was his chief difficulty, when once he had fairly taken the task in hand. So the whole is entirely new, let it be said at once. Yet with that

conscientious truthfulness which have always been the clearest note of his work, we find him perpetually submitting his opinions to others, whom he considered greater authorities in this or that branch of sport with the gun: only to receive their assurance that they had nothing to add to what he had said, and that to alter it would be to spoil it. Still another characteristic sentence occurs a few pages later, when speaking of covert shooting, grouse-driving, and walking-up game, he says, 'I have been so unfashionable as to defend both by turns, and I have always been of opinion that any sport which appeared to be growing unpopular was worthy of the little support I could give it.'

"This affords yet another key to his work for the past forty years. But what Mr. Teasdale-Buckell has not said, which may as well be put on record once and for all—is that no sportsman of our times has ever exposed more sporting fallacies, fashionable for the moment, than he; and that in no spirit of antagonism, but simply with the welfare of sport in view. Thus does a preface indicate the quality of a book which would need pages to review it, if anything like serious reviewing were attempted; one which, if it were possible to learn all about shooting from a book, would certainly teach it; a book which, in short, is indispensable to every man who shoots or would become a 'complete shot.'"

Obviously every reviewer has not, even yet, an axe of his own to grind.

Little material to the grouse preserver has occurred since the publication of the first edition. Mr. W. Steuart-Menzies, in the North of Scotland, has introduced the Willow grouse from Norway. Some have paired with red grouse, which assists to prove the red grouse only a local variety of the Arctic bird, which changes to white in winter, and is found in the game shops under the incorrect name of "Ptarmigan." Mr. Menzies is hopeful that these birds will improve the constitution of the red grouse by cross-breeding with them. He has not yet succeeded in finding any cross-breds, but some of the Willow

grouse that paired amongst themselves bred chicks darker in colour than those bred in their original homes. I do not think we want to introduce white into our grouse. At the same time, if Willow grouse would occupy in Britain the kind of ground they make their home in Scandinavia they would mostly have to look for it below the level of the grouse moors. When the importations were first turned out they would not eat heather nor corn, but preferred the freshest twigs of the birch trees. There is in both Scotland and Wales a great deal of useless ground between the range of the grouse and that of the partridge. This is mostly bracken, grass, and birch tree, covered with fir trees where the slope of hill and depth of soil permits such growth. If the Willow grouse would inhabit this ground alone they would be a great advantage to sport, whereas if they enter into competition with, and cross-breed with, the red grouse, their merits will not be so assured.

In the first edition I left one question in regard to partridges unsolved. My doubt was whether cock partridges that have never paired will take to artificially hatched chicks. Mr. John P. Gardner, so well known for his spaniels at Hagley Hall, Rugeley, has been good enough to obtain for me the following letter from Foster, the gamekeeper of the Marquis of Anglesea, and I leave it to speak for itself:—

"The following is the way I used my cock partridges. I caught up the covies in November from the middle of my beat. I penned the cocks where I caught them, so that the ground would be familiar to them when released (I let the hens go again).

"I made small pens (close to the large one where the cocks were) 2 yards square and 4 feet high with string net on top, and put turf 2 feet high on two sides, and 4 feet high at the back, leaving the front unturfed. The front of the pen should be a sparrow-proof wire door with hinges at top, so that it could be lifted from a distance with a string. I dug the inside of pen

and sowed barley in April, which makes good hide for the cock and his brood in June.

"I put my eggs under hens until the 'chipping stage,' then put them in incubator to hatch. When hatched I caught a cock for each pen, according to number of chicks I had. I then gave them two chicks each, and watched close by to see if they took to them.

"He will take to them in less than ten minutes if he is going to. I could tell by the call of the old bird if he had taken to them. Those that had taken to them I gave sixteen more each, and on the third day released them by pulling gently the long string that was fastened to the door. By having cover in the small pen the old bird does not notice the door being lifted up, so he goes out quietly. It sometimes took them an hour to discover that they could get out.

"I put the chicks to the cock by means of a hot-water box I made myself, and when he hears them 'piping' he calls them out.

"The 4-feet bank of turf is so that I could approach the pen unseen, and it is at the bottom of this where I leave a space for the hot-water box to fit.

"I had fifteen out of twenty cocks take off chicks. I have never tried hen birds, but as you will see the cocks I used had never paired. I used Hungarians the year before that, and had a lot of them that would not take chicks."

Mr. Gardner suggested that they might have been old cocks which had paired the previous season, but fifteen out of twenty is a very large proportion of old cocks to get out of caught-up covies, and further correspondence has elicited the satisfactory fact that there were only three old birds in the twenty.

In reference to the extreme importance of finding fosters for artificially hatched partridges, so as to avoid the packing and wandering of the birds, I suggested some time ago the probability that hen pheasants could be successfully pressed into service, after their own eggs had been taken from covert

and hedgerow, and when they had been kept sitting on clear, or sham, eggs, until chipped partridges' eggs were ready for them. Many mixed broods have come under my observation.

It is generally believed that pheasant hens are bad mothers, but that is not a fact, and the mistake is explained at page 276. Partridges' eggs are somewhat later in coming than those of pheasants, and for this reason only where the early eggs of partridges are removed as laid, under the Newmarket system, could they be forward enough to give to hen pheasants in the chipped stage before the bird had been sitting twenty-four days.

Generally the usefulness of hen pheasants has departed when they have laid one lot of eggs, and this nest has been taken for artificial hatching and hen-coop rearing. The second nest is of little, if any value. Although there is a limit to paired partridges on any area, hen pheasants may be much more thickly distributed about hedgerows, and I have seen enough now to be pretty sure that although they usually fail to rear their own chicks, in consequence of the latter's bad habits of wandering, they can, as well as partridges, rear the chicks of the last-named birds. If so, instead of the laid-out pheasant hens being useless assets, they will become of the utmost importance to partridge preservers. The separate wanderings of the pheasant chicks to them make every mother a bad one, and even a pair of partridges do not have much success with pheasants' eggs deposited in their nest.

In exception to my 40 or 45 yards, the *Times* reviewer has invited me to measure the distance when next I kill a dozen snipe. At page 331 I have made some remarks upon a Scottish snipe shooter who, perhaps like the *Times* reviewer, thought himself a snipe shot, and was aghast at snipe which regularly rose farther off than he had ever shot at one. The shooting of Scottish snipe in August and September is the killing of birds

before the migration, and that is hardly snipe shooting in the proper sense of the term. I have measured my shots very often in my young days, but shall not do so again. However, on the same bog where the Scottish crack would not even shoot *at* the snipe, others could kill them, and in order to have an independent witness to refute the *Times*, I wrote to my friend Rev. W. Serjeantson, who, like everybody who ever saw "a real snipe shot," was astounded at the work done by Captain Hugh Owen in Pembrokeshire thirty-seven or thirty-eight years ago.

Of course folk who fire at targets to form their ideas of distances will scarcely be able to credit actual facts such as they are recorded in Mr. Serjeantson's letter, to which I can add a greater surprise still—namely, that Captain Owen said that he used No. 5 shot. However, crack shots at other game were amazed at the way this gentleman killed snipe, and lest there should arise a generation who do not know what ideal snipe shooting has been like, here is the reply to my queries:—

"ACTON BURNELL
"*Jan.* 25, 1908

". . . he certainly did shoot *snipe* marvellously. As you say, the snipe got up wild, and when —— and I had both done with a bird, he would bring it down, and it would fall like a leaf in the far distance. He killed them over and over again at 60 and 70 yards, and he shot with an old muzzle-loader with a biggish hole half-way up the barrel, which was surrounded by a black ring from smoke and 'residuum' as big as half-a-crown."

Mr. Serjeantson then goes on to show that this wonderful form at snipe did not apply to pheasants, and that he and another gun, although "nowhere" against the snipe shot at his own game, were quite equal to him at tall pheasants. I have no knowledge how Captain Hugh Owen loaded his gun.

but the principles of muzzle-loading were somewhat different from those of breech-loading. For instance, I should not have been surprised to find that from 1½ to 1¾ oz. of No. 5 shot were used in conjunction with a very light load of powder. This was a common enough load for muzzle-loaders, and although a snipe does not want much of a blow to kill, it requires hitting, and breech-loading proportions of powder and shot would make a very open pattern at 60 or 70 yards with No. 5 shot. Although heavy loads start slowly, big shot maintain velocity better than small, so that this might have explained this extraordinary work on snipe, about which, as a fact, there is no doubt whatever.

If that was the explanation, the less brilliance at pheasants, which require so much more penetration than snipe, is easily accounted for. Compared with this kind of work, August and September snipe shooting in Scotland is feeble. In Shetland the home-bred full snipe have run up to 8¼ oz. weight, whereas the migrant's average is 4 oz. I have called snipe shooting "the fly fishing of the shot gun," but I should not apply that to the killing of Scottish snipe before the migrants arrive.

Since the first edition was written in October 1906, two field-trial seasons for retrievers have passed. That of 1906 exhibited nothing remarkable, because the scent was abominable at St. Neots, and was not good at Ipswich, where the Kennel Club held its first trial since its futile attempt at Sleaford thirty years ago. All the dogs failed badly on runners at these two meetings, at least the winners did. Grouse of Riverside, a show winner, won, but a win when no dog does even moderate work does not prove merit. Sweep of Glenduriel won at the Kennel Club meeting, but he failed badly with his last runner, which he roded up to a fence the bird had passed through, and would not then persist, but at once threw up and came back to heel. The Labradors in 1907 have re-established a principle previously mentioned in these pages—namely, that in

the presence of good representatives of the old working breeds, and in scenting conditions good enough for verdicts to be given on work, and not merely upon breaking, the show sorts cannot win.

In a stake of twenty dogs there were three Labradors which won three out of the four prizes at the Kennel Club meeting. Mr. M. Portals' Flapper was first; the Duchess of Hamilton's Juno was second; and the Hon. Holland Hibbert's Munden Single was fourth. The third dog was one of Mr. C. Eley's flat-coated blacks, which, although of show blood, nevertheless throws back to the old sorts, and is not of show appearance. With the nominations nearly entirely taken by owners of show retriever blood, the winners are almost invariably the reversions to old types, proving that the show judges' ideal is totally wrong.

I have been recently informed that the night dog cross was not perpetuated at Netherby, and that such a dog was only used for getting rabbiters canine assistants. Nevertheless, I am still inclined to the belief that a strain of mastiff has entered into the breed somewhere, and I do not base my views merely upon reports of where it might have happened, but as well upon the character and appearance of the Labradors. Their carriage of stern, and fighting jaws, are as suggestive as the fact that so-called "freaks" of sandy, or fawn, colour have occasionally been bred, without any known reason why. Such freaks are in my view merely reversions to some forgotten cross. On the other hand, white is a frequent "freak" colour amongst breeds of black animals.

If we were all starting afresh, I suppose that the best retriever colour would be that of the Irish red setter. It is the most indistinguishable of all, even in a Scots mist. I might say particularly in a Scottish mist, although this seems so unlikely until experiment is made. However, we are not starting anew, and have the best chance of finding good dogs

amongst the greatest numbers, and the majority are not reversions, or freaks, red or sandy. Those sportsmen who abuse dog shows, and yet are truly described in the language of *The Suffolk Sportsman*, nearly two centuries ago, are not quite consistent in precept and practice. That keen observer remarked that "every sportsman has a toy in his kennel, from his honour to the ratcatcher," and to breed retrievers to colour is in selection to prefer colour to all other qualifications.

The appreciation of those who know much is to an author a good set off to those few reviewers who revoked when they thought to trump. But probably to the reader a good opinion from a good man is of more importance still. The value of a book so much depends upon whether a reader can believe what he reads, therefore I make no excuse for quoting a letter which was very kindly written to me by Mr. R. Rimington Wilson, who said: "I have read it with the greatest interest, and never read any book on shooting with so much pleasure or sympathy. I very much doubt whether anyone else could have written a book on the subject of such all-round excellence."

G. T. T.-B.

March 9th, 1908.

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THE COMPLETE SHOT

THE COMPLETE SHOT

ANCIENT ACTIONS

BY far the greatest inventions in gunnery have been made by chemists. The cleverness and boldness of many wonderful inventions for loading at the breech all aimed at the well-nigh impossible. The powder was always ignited from without, and had to be either partly or quite loose in order to facilitate ignition by means of external fire. That is what beat the inventors of five centuries, who were for ever trying to find a breech-loader, a revolver, or a magazine weapon. In default of these working satisfactorily, they tried weapons with seven barrels, and others with fewer. But it was all to little purpose; the detonator had not been discovered by the Rev. A. J. Forsyth, and the chemist to the French army of Louis XV. had not then invented fulminate of mercury. Consequently a closed-up cartridge containing its own means of ignition was impossible, for although detonating substances were known years before, they were such as did not always wait to be detonated—in other words, they were not stable. They were too dangerous for use, but nevertheless the attempts made at breech-loaders, and especially at magazines, were more than equally dangerous. One weapon had eight touch-holes in eight positions in the barrel, which was eight times charged, one load and charge upon top of the next. That nearest the muzzle was fired first (if the weapon was ever fired at all), and so on, down to that nearest the breech. What prevented the first igniting the rest, and sending all off together with a burst weapon, is not known. If they did not go off all together, one would

suppose the firing of several loads in succession would give to those loads in the breech the best ramming ever known. But for this ramming to excess this invention went very near to a more perfect success than any modern magazine weapon. The trouble with all the latter is what to do with the empty cartridge-case. But this old weapon had no cartridge-case. Its ignition was from the outside, and was always ready. It is true that the difference of length of movement of shot within the barrel would make some difference to the velocity of each shot, but not more than would be equalised by a very small extra dose of powder for those charges nearest the muzzle.

Another form of repeater was a breech-loader which carried several charges of powder in the stock, which, in turn, were shaken into a revolving chamber, in front of which, before it was in place for firing, the bullet was inserted for each load, as its turn came round. Other repeaters were simple revolvers, much like the weapon in use now, but of course used without cartridges of self-contained ignition material.

Indeed, the ingenuity expended on breech-loading before the advent of detonating powder for ignition was really greater than the more modern efforts to do a much more simple thing. At the same time, had they succeeded, as they very nearly did, by doing without a removable cartridge-case, they would have accomplished that which is still required for the perfect working of magazine and automatic weapons.

The most elaborate of all the old repeaters was a revolving double-chambered German weapon. It had ten chambers, and each of these carried two charges, with a touch-hole for each. The majority of the old breech-loaders had movable blocks on the principle of the Martini, but instead of the hinged blocks being solid, as in that weapon, they were mostly hollowed out to take the charge and the bullet; sometimes held in a cartridge, but generally with the powder loose, and always loose when in the chamber, in order that there should be free communication with the touch-hole.

Sometimes the barrel was hinged in order to drop down at right angles with the stock, and this was really the forerunner

of our drop-down guns of to-day, which are consequently some centuries old in principle, and had it not been for the absence of detonators there would have been nothing left for the nineteenth century to invent.

It has been said that the Prussians were first to take up the principle of the breech-loader for war, but that refers only to the detonated modern breech-loader. Some of the soldiers in the American War of Independence were armed with the breech-loader already mentioned, in which the trigger guard unscrewed the opening into the breech; but although this invention was possibly the soundest in joining of all the old ones, it was slow, and probably was not much used for that reason.

The Venetians had ships armed with cannon as early as 1380 A.D., and in Henry VIII.'s reign the wrecked *Mary Rose* carried *breech*-loaders, designed on a principle which may possibly have suggested the wire guns of the present. The tube of iron or brass (for both were used) was surmounted by rings of iron which had evidently been slipped over the tube and hammered on while red-hot. These then contracted upon cooling, and pinched the bore smaller, so that, intentionally or not, the bore was made to expand to its original size upon an explosion occurring before any stress was put on the metal of the internal surface by the powder-gas. That is to say, all the first part of the strain went to expand the rings on the outside of the gun before the inside had reassumed its natural dimensions; or, in other words, the tension between the external big circumference and the internal small one was equalised, just on the same principle as it is in the latest big guns. This is known, because some of the *Mary Rose's* big guns were got up from the sea about half a century ago. She was over-weighted, and it is quite probable that her loss had a good deal to do with teaching the nation that before everything a warship must be handy, so that, when the Spaniards sent their great ships to fight Elizabeth, her smaller craft, and Britain's uncertain weather, between them sank or squandered the whole Spanish fleet.

ANCIENT PISTOLS TO AUTOMATIC AND ELEPHANT RIFLES

ITALY has the credit of the invention of the pistol, which came into being soon after the designing of the wheel-lock and the rifling of barrels. Caminelleo Vitelli of Pistoia made the first about 1540. It was in the manufacture of these small weapons that gun-makers from this date to the beginning of the nineteenth century excelled. The workmanship was generally of a high order, and the ornamentation, especially of some of the German specimens, was extremely artistic.

Moreover, during the flint and steel age, some double-barrelled pistols were built with two locks and only one trigger. Although these weapons worked quite perfectly, it must not be assumed that the makers of these pistols could have made a double shoulder gun to work satisfactorily with but one trigger. That difficulty was overcome at the end of the nineteenth century; but even then the clever designers had not discovered exactly what the former trouble was, and it was freely stated in a way that is now known to have been wrong. Indeed, the author was the first to discover the real reason for the involuntary second pull and double discharge. As this phenomenon did not occur in pistols, but did so in shoulder weapons, it apparently seemed easy to trace the cause. Very early in the nineteenth century, dozens, and since then hundreds, of designers and patentees have set out with the announcement that they had discovered the true cause of the trouble, and met it with a patent. As the latter were always badly constructed, it may be assumed that the patentees were wrong in their diagnosis. As a matter of fact,

they were, as was proved when the author published the true cause of involuntary pull in *The County Gentleman,* and for a time had to meet alone the hostile criticism of most of the gun trade, the members of which now admit the truth of those criticised statements. Although the true reason must be dealt with under the heading of single-trigger guns and rifles, it may be briefly stated that the success of the single-trigger double-barrelled pistol was not because of its more feeble explosion, as was supposed, but because the recoil continues long enough to allow the will of the shooter to gain command of his muscular finger action, before the check to recoil occurs. Whereas, with the shoulder gun, the finger which has let off the first lock flies back as the trigger is carried from it by recoil, and this sustained muscular action cannot be stopped by the will as quickly as the gun recoil is lessened by the shoulder. Consequently, we involuntarily give a second pressure to the trigger, without knowing that we have ceased giving a first. This want of perception of what we ourselves do is caused partly by quickness of the recoil, and partly because the recoil relieves the pressure, and our wills have nothing to do with the matter. Or, to be more correct, we pull off the trigger once intentionally, but are unable to cease pulling when the trigger has given way. Consequently we unconsciously follow up the trigger as it jumps back in recoil, catch up with it, and involuntarily pull it again without knowing that we have let go, or had the trigger momentarily snatched from us.

It is clear that the understanding of this principle was as necessary to designers of automatic repeaters as it was to makers of double-barrelled shot guns, and yet the Mauser repeating automatic pistol and the Webley Fosbery automatic revolver were invented, with some others, before the reason of the involuntary pull had been discovered; and more than that, the author had tested the Mauser with its shoulder stock satisfactorily. But no satisfactory automatic rifle had been then invented, and the trouble with them was to prevent the sending forth of a stream of bullets when only one shot was wanted. The greater force being dealt with, had brought

into action the difficulty of the involuntary pull. This has now been overcome; but still there are other difficulties which have been treated less satisfactorily, and those who are ambitious to use automatic weapons will be wise to confine that ambition to the many pistols and the revolver in the market. Repeating shot guns are lumbering tools, from which disqualification the automatic weapons are little likely to be free. Still, it is quite possible that a gunner could shoot more birds out of a single covey with one automatic gun than with two double guns. But what of it? The aim of the gunner is not merely to shoot at one covey, but to keep on shooting fast for perhaps half an hour. The thing that stops very fast shooting is not loading and changing guns, but heat of barrels, and consequently to make these single barrels equal to the doubles there must be four of them in place of two doubles, and six of them in place of three ejectors. The time has not yet come when anybody wants to employ three loaders to carry six guns.

There is some reason to prefer the automatic principle for pistols and revolvers, because the user's life may often depend upon the quickness of his shots at an enemy, but there is less reason for their use in military rifles, and actual disadvantage for sporting rifles and shot guns. The author has shot the Mauser, the Colt, and the Fosbery with satisfaction to himself. The latest invention is a sliding automatic pistol of .32 gauge invented by Messrs. Webley. But no automatic pistol can be as reliable as the service revolver, or as the Fosbery, since a sticking cartridge or a misfire disables any of them.

It is often said that these spring actuated actions, on which the barrel slides back, give less recoil than others, but in practice this is not so, and in science it could not be so, although it *is* stated in the last Government text-book that they reduce recoil.

The principles on which it is sought to make automatic rifles are as follows:—

1. To actuate an ejector, magazine loading, and closing action by means of gas obtained from a hole in the barrel.

2. To actuate the same movements by means of recoil

and rebound of the sliding barrel on to an independent stock grooved to carry the barrel, and fitted with a spring.

3. To actuate the same movements by means of allowing the whole weapon to recoil on to a false heel plate spring, and rebound from it.

4. By allowing a short sliding recoil of the barrel to make the bolting action slide farther back on to the stock and a spring, and to rebound from them.

Several of these principles have been employed in conjunction in this or other countries. The recoil is made to compress a spring, which by re-expansion completes the work of closing up the rifle, when it does not stick and fail, as in all specimens of automatic rifles has occurred at intervals.

All nations are now armed with magazine repeating rifles, but none have yet adopted automatic loading for rifles. The choice between the various magazine mechanisms is a mere matter of taste, but the shortening of the British national arm to 25 inches seems to have been done without regard to the fact that no rifle of 25 inches can compete in accuracy with an equally well-made and an equally well-loaded weapon of 30 inches, although it may compete favourably with the discarded Mark II. Lee-Enfield, which was improperly made and also badly loaded. Unfortunately, our prospective enemies are not embracing the faults of the Mark II., but are adhering to a rifle instead of a carbine. That is the correct term to employ to describe the new weapon.

The carbine of any period has generally been equal to the rifle of the preceding decade, but it has never yet been equal to the rifle of its own decade, and never will be.

Miniature rifles for amateur soldiers in the making are very numerous. The best cheap one the author has handled is the rifle with which Mr. W. W. Greener won the *Navy and Army* competition, which was managed by the author. What is here meant by a low price is £2, 2s., and under. The rifle was used with peep sights. But better advice than naming any maker is this. All the makers profess to put a group of seven shots on to a postage stamp at 50 yards. They all

employ expert shooters who can do this if it is to be done. Buy the rifle with which they do it in your presence, and it will then be your own fault if you cannot perform likewise. This test of a single rifle is quite satisfactory; but a double rifle has to be dealt with differently, as is explained in another chapter. Of course, it is a mistake to shoot a rifle from any sort of fixed rest; the weapon, when loose in the hands, bends its barrel, or flips, jumps, and also recoils, and it is good or bad according as it does accurate work under the action of all these influences. A rest to steady the arms is quite permissible, but a vice to hold the rifle is not.

Once Mr. Purdey expressed the opinion that he could learn as much from his customers as they could from him. The author thought this so shrewd a remark, that, having a knowledge of the many good sportsmen and big-game hunters who employ the weapons of the Messrs. Holland & Holland, Messrs. John Rigby, and Messrs. Westley Richards, he wrote to each of them to ask their opinions of the best bore and weight of rifle, sort and weight of powder, sort and weight of bullet, and velocity of bullet to be expected, for each of the following animals, as if each were the only object to be pursued by the sportsman. He stated at the same time, that compromise to meet the requirements of several, or many, of these animals he regarded as a personal and individual matter to the sportsman. He pointed out also that in asking for opinions he knew that he was asking for a consensus of opinion of the past customers of the firms in question. It is interesting to compare the views of each maker as to the best rifle to use for everything, from a rook and rabbit, to an African elephant charging down on the gunner, and requiring the frontal shot. What is intended is the very best weapon to have in hand at the moment, if there were nothing else to be considered. Mr. Holland's reply is as follows:—

"98 New Bond Street, London, W.,
"*October 11th*, 1906

"Dear Mr. Teasdale-Buckell,—It is impossible in the space of a short paragraph to go thoroughly into the question

of the best bore, weight of rifle, etc. etc., best suited to each kind of game. A good deal must depend upon the conditions under which the rifle is used, the capabilities of the sportsman, etc., but taken generally the rifles mentioned below are those we have found to give the best all-round results, and our opinion is formed upon the reports received from a large number of sportsmen, including many of the best known and most experienced game hunters.

"*Rooks.*—.220 or .250 bore.

"*Rabbits.*—.250 bore; weight about 5 to 6 lbs.

"*Red Deer, Scotch.*—(1) .375 bore double-barrelled; weight 9½ lbs. (2) .375 bore sporting magazine rifle, Mannlicher-Schonauer for choice; weight 7½ lbs. (3) .375 bore single-drop block; weight 7½ lbs.; velocity about 2000 ft.; charge 40–43 grains of cordite or its equivalent; 270 grains bullet, either soft-nosed solid or hollow point.

"*Chamois.*—Same as for Red Deer, also .256 Mannlicher.

"*African Antelopes.*—.375 bore as above.

"*Indian Deer.*—.375 bore as above.

"*Moose, Wapiti, and big* 35–50*stone Deer of Hungary, etc.*—.450 bore double-barrelled rifle; weight 10½ lbs.; charge 70 grains of cordite powder or its equivalent; bullet soft-nosed solid 370 or 420 grains; velocity about 2000 ft.

"*Lions.*—(1) 12 bore Magnum Paradox; weight 8–8½ lbs. charge of smokeless powder equivalent to 4½ drams of black powder; 735 grains hollow-point bullet; velocity 1250–1300 ft. (2) .450 cordite rifle same as for Moose, etc.

"*Tigers, from houdah or machan.*—12 bore Paradox; weight about 7¼ lbs.; charge equivalent to 3¼ drams of black powder; 735 grains bullet; velocity about 1100 ft.

"*Lions and Tigers, followed up on foot.*—12 bore Magnum Paradox.

"*Elephant, Buffalo, etc., in thick jungle.*—10 bore Paradox; weight 13 lbs.; nitro powder charge equivalent to 8 drams of black powder, in solid drawn brass case, solid nickel-covered bullet 950 grains.

"*Elephant, Buffalo, in more open country.*—.450 cordite rifle same as above; charge 70 grains cordite or its equivalent; nickel-covered solid bullet 480 grains."

Mr. Rigby replies as follows:—

"*Rooks.*—.250 bore, shooting usual Eley or Kynoch cartridge.

"*Rabbits.*—.300 bore, shooting usual Eley or Kynoch cartridge.

"*Red Deer, Scotch.*—Double-barrel hammerless .303; shooting cordite and split-nose bullets; weight of rifle about 8 lbs.

"*Chamois.*—Mauser-Rigby magazine rifle with telescope sight; weight of rifle 7½ lbs.; Mauser 7 mm. cartridges with split bullets.

"*African Antelopes, Indian Deer, Ibex, and Tibet Wild Sheep, Lions and Tigers.*—.350 bore Rigby double barrel; weight 9¼ lbs.; cordite cartridge giving 2150 f.s. m.v.; bullet 310 grains, split and soft nose, or Mauser-Rigby magazine shooting same ammunition; a grand rifle.

"*Eastern Elephants, Eastern Buffalo, African Buffalo, African Elephants.*—.450 high velocity cordite double barrel; weight 11 lbs.; bullet 480 grains m.v. 2150 f.s."

Mr. Leslie B. Taylor replies for Messrs. Westley Richards thus:—

"BOURNBROOK, BIRMINGHAM
"*October 13th*, 1906

"DEAR MR. BUCKELL,—I regret that I could not give you the information earlier, being up to my eyes in work. I have filled in the sizes I think suitable for each kind of game gathered from our clients' own opinions formed from experience. You will notice that in some cases I have mentioned the .450 high velocity rifle. As regards India, this rifle will now be unavailable; a recent alteration of the shooting regulations excludes the .450 bore, which like the .303 cannot be imported into that country for private use.

"The new accelerated express rifle .375/.303 will no doubt, on account of its being associated in the minds of the officials with the actual .303 bore, come under the same ban. But this is a powerful rifle, as you will gather from the enclosed particulars, and when used with the capped bullet becomes a most formidable weapon, and has been satisfactorily employed against Tiger.

"I have just introduced a new extension of the accelerated express system .318 bore, 2500 feet velocity, 250 grains bullet, muzzle energy 3466 ft. lbs., and this ranks only second to the .400 bore rifle. It is remarkably accurate, and as it is used in conjunction with the copper-capped expanding bullet, it will take the place of the .450 bore now prohibited.

"I merely give you these particulars, as you will see that very shortly, if the Indian regulations continue in force, as I have no doubt they will, the other information might be considered out of date.—Yours very truly,

"LESLIE B. TAYLOR

"*Rooks.*—.250; some prefer .297/.230, a similar one.

"*Rabbits.*—.250 or .300; latter preferred if country will permit.

"*Red Deer, Scotch.*—Many sizes are used, from .256 Mannlicher; the .360 high velocity is effective. For those who prefer a very flat trajectory superior to the Mannlicher, the new accelerated h.v. .375/.303 is taken.

"*Chamois.*—Nothing less than .360; the .375 with copper-capped bullet is very effective, although the .256 is often used: it is found not to kill the beast.

"*African Antelopes.*—.360 and nickel-capped bullet, a .375/.303 accelerated express; many sportsmen are using the .303 with nickel-capped bullet.

"*Indian Deer, Ibex, Tibet Wild Sheep.*—.256 Mannlicher, Mauser .275, also .360 and .375 bore with capped bullet; some use ball and shot guns 12 bore.

"*Lions and Tigers.*—.360 to .450 h.v. express; the new .375/.303 has proved successful at Tigers with the capped bullet.

"*Eastern Elephants.*—The best weapon I know, of which I have the most excellent accounts, is the .577 h.v. rifle, 100 grs. cordite and 750 grs. solid and capped bullet.

"*Eastern Buffalo.*—.360, .400, and .450 h.v. express.

"*African Buffalo.*—.450 h.v. express and .577 h.v. express.

"*African Elephants.*—The .577 .100/.710; some use the .450, but the former is a most deadly weapon.

"I have just received information from an African sportsman that he has shot an African buffalo with a Westley Richards 12 explora, the horn measurements of which are strikingly fine, and promise to be a record."

In reply to further questions, Mr. Holland writes as follows:—

"*October 13th*, 1906

"DEAR MR. TEASDALE-BUCKELL,—I don't think it necessary to distinguish between African and Indian elephants. No doubt the former is more difficult to kill with the frontal shot, but you must try and get another shot; then, again, the 480 grain (450) bullet gives enormous penetration, and probably would penetrate the head of an African elephant as well as any bullet you could use. For a charging elephant, there is nothing like the big bore for stopping, or at any rate turning the animal. Velocity: it is a curious thing that we appear to get *practically* the same elevation with the 375 (450) bullet as the 480 gr. one, and practically the same velocity. We attri-

bute this to the extra weight of the 480 gr. offering more resistance to the powder, and thereby setting up higher pressure, greater heat, though practically making the powder do more work. HENRY HOLLAND"

It may be said that at this moment velocities are undergoing radical change, due to the improved powder Axite, and that one maker offers rifles giving to the 303 bullet a muzzle velocity of 2700 f.s. This means a greater stride than that from the express to the high velocity rifles, and if it is accurate, then trajectories have been very much reduced.

In reply to a still further question, the following is a reply that explains itself:—

"*October 15th*, 1906

"DEAR MR. TEASDALE-BUCKELL,—I have your letter of the 12th inst. With regard to the .500/.450, I think I said 2000 ft.; it should have been about 2100 ft. As a curious confirmation of the above, I may point out that in Kynoch's book on the ballistics of various rifles, it gives 2150 ft. as the muzzle velocity of a .450 bore rifle with 70 grains cordite and 480 grains bullet, whereas with 70 grains powder and 420 grains bullet it gives the muzzle velocity as 2125 ft.

"The muzzle velocity of a 950 grains bullet from a 10 bore Paradox, nitro powder, is 1500 ft. The bullet is made either of solid hardened lead or steel cored; see the enclosed illustrations of the latter. With regard to the rook and rabbit rifles, the .220 shoots 3 grains powder and 30 grains bullet, and the .250 7 grains powder and 56 grains bullet. Solid bullets for rooks, and hollow-point bullets for rabbits.—Yours faithfully,

"H. W. HOLLAND"

ANCIENT AND MIDDLE AGE SHOOTING

IT is difficult to know where to start an account of the early history of shooting. The long-bow was used in deer shooting, as also was the cross-bow, and if we may believe the early artists—and I do not see why we should—deer running before hounds and horses were shot from the saddle with the cross-bow, and the arrow went in behind the neck and out at the throat. The artists of old were obviously as imaginative as Royal Academicians when it came to sport. For instance, nearly every picture of a woodcock or snipe on the wing, including one of J. W. M. Turner's, puts the beak of the bird sticking out in front, on the principle of "follow your nose"; but every woodcock and snipe treats even Turner with contempt, and hangs its beak in spite of the greatest master of English landscape. Mr. Thorburn makes no such mistake, but even he has made a couple of cock partridges court one another; and it is really very difficult to believe in the accuracy of artists such as the delineators of the Bayeux Tapestry, where five men may be seen applauding Harold's coronation and with only eight legs between them, most of them clearly disconnected with the men.

When, therefore, we see drawings of the fourteenth and fifteenth century people engaged in smiting down flying birds with an arrow from a cross-bow, we may be permitted to believe that an ideal has been drawn, and that most of those who tried to kill birds in flight in time learnt to prefer the falcon or the net. Even stricken deer that the Middle Ages artists show us shot through the neck from behind must have had totally

different habits from their present-day relatives, because it is not the habit of pursued deer to hold up the neck but to carry it horizontally at such times, so that the back-to-throat arrow would be possible only from above.

It is less difficult to believe the writing in the *Master of the Game* and its French original than to believe the pictures with which the latter was adorned—probably long afterwards, by someone who had not the authority of the author.

Artists were not then sportsmen, but in Assyria they obviously were so. In the British Museum room devoted to that ancient kingdom, in low relief may be seen much that is looked for in vain in the technically superior sculpture of the classic periods of Greece and Rome. That is to say, the actual feelings and characters of the beasts are conveyed in the outlines. The horses were obviously of precisely the same character as the arabs and thoroughbreds of to-day. They are not obstinate brutes, little better than mules, like the ponies of the Parthenon, which all lay back their ears *at* their masters, but, on the contrary, the Assyrians are generous, high-spirited beasts that fight *with* their masters, pursue in spirit with them, and fight with ears laid back only when they are face to face with a lion, and going to meet him. The artists saw it all, or they would have blundered in the expression of the horse, which is mostly in his ears, but they never blundered. Surely this was the first shooting recorded, and whether it was done by bow and arrow or by hurling the dart matters nothing. It is the most ancient and the most authentic of all the ancient records of sport. If it were untrue, it would be the most contemptible, because the most flattering art. But it bears internal evidence of its own truth, and that the country of Nimrod produced mighty hunters, for which there is also Biblical evidence; no race or nation of sportsmen has since been able to boast similar sportsmanship. For man and horse to face a charging lion and kill him with a spear, or dart, is to place sportsmanship before human life; and even David, who killed a lion and a bear, did not do that, but merely defended his flocks, probably in the only way open to him. He was a mighty shepherd and a mighty king, but

not a "mighty hunter," and "no sportsman," as the story of the one ewe lamb proved.

It is a long jump from Nimrod to the hunting in the New Forest, which was obviously as much shooting as hunting, when Rufus was killed by an arrow, meant, or not meant, for a hart. Whether there ever were outlaws named Robin Hood and Little John does not matter, because fiction is always based on fact, or it does not live a day. The fiction or fact of the great shooting of the king's deer by these outlaws has lived seven hundred years, and it is more easy to believe that there were many generations of such poachers and highwaymen than that there were none at all. The highest office in the land was then one of robbery, and it is a poor king who has not some subjects who will offer him the sincerest form of flattery, namely imitation.

Gunpowder is said to have been invented in China many years before it was re-invented in Europe. We are apt to marvel that no explosive was made use of before, but learning was very much in the hands of the priests at a time when the latter class was especially sincere, and when the people were full of superstition or belief. It may be, then, that the first discoverers of gunpowder for conscience' sake made no use of what must have appeared to be an invention of the Devil. Such inventors, if there were any, might have been the more disposed to this course because the stuff was clearly as destructive to its users as to an enemy, until the building of guns had progressed for many years.

It is not quite certain in which battle was first employed gunpowder—a fact which indicates that it did not do much for its side. It appears to have been the guns that were weak, not so much the powder, which was probably very much the same when used by Henry VIII. as black powder is to-day.

It is, moreover, not certain that guns were any better at Waterloo than they had been in the time of Elizabeth. The reason for this was the want of good metal. It is a known fact that thickness of metal becomes useless after a certain point is reached, so that iron and brass guns could not be made to take

enormous charges of powder and heavy shot without bursting. This might have been done by making them very long and using a slow burning powder, but that way out never seems to have been thought of until recently. The reason modern big guns will take such enormous pressure as the big charges behind heavy shells give, is, first, that they are made of steel, and second, because the tension on the steel internally and externally is equalised by a very clever method. The guns are built up by being bound in wire in a heated state, so that when this wire cools it contracts the internal tube as it contracts itself. This being the case, when an explosion takes place in the finished gun, it has to overcome the wire contraction on the outside of the gun before the internal tube can begin to expand beyond its natural size. That is how a thickness of metal is made serviceable, and prevents a bursting of the internal surface before the external bigger surface is strained. In other words, the pressure is resisted equally all through the thickness of the walls of the barrel. This has entirely revolutionised big gunnery during the last thirty years, and has enabled ships of war to hurl 800 lb. shells through the armour of enemies who are hull down beyond the horizon.

Gunpowder was for centuries used in war before it was much used in sport. The reason for this was that there was no good method of letting off a sporting weapon. To apply a match to a touch-hole obviously took a good deal of time, and besides gave warning to the game, so that, although shooting flying game had been at least an ambition in the days of the cross-bow, shooting the game upon the ground with "hail shot" was practised for many years before anyone attempted to kill flying game with shot guns. It is curious that when this practice was in vogue dogs were taught either to point or to circle their game at their masters' pleasure. This circling had the effect of indicating the exact position of the crouching covey, and at the same time of preventing the birds running away from the shooter. A dog that would "circle" was held in much more esteem than one that would only point, but one that would do both was far the most highly valued. The

shooter had to see the birds on the ground before he could bring his lumbering weapon to bear, and begin to let it off This probably continued long after the wheel-lock was invented, in 1515 A.D.

The flint and steel method of ignition enabled the shot gun to be used on flying game, but the flint and steel came in somewhere about the year 1600, and shooting flying game did not become general until after 1700 A.D.

Meantime there had been royal prohibitions in this country, as well as in France, against the use of hail-shot, and it can well be understood, at a time when shooting at coveys on the ground was considered no breach of sporting etiquette, that some restraint became necessary. Before the use of the flint and steel, the heavier weapons were employed by using for them a stand to rest the muzzle upon, and this was made necessary, not so much by reason of the weight as by the uncertainty of the precise moment of the explosion, and the expediency of keeping the weapon "trained" on the object until the powder chose to catch fire and explode.

Before the invention of the flint and steel, the value of rifling had been discovered. There is a doubt whether the discovery is due to the late fifteenth or the early sixteenth century, but at any rate it was well known on the Continent about 1540 A.D. There are rifled barrels at Zürich arsenal that have been there since 1544. The most ancient in this country was brought from Hungary in 1848, and bears the date 1547. There has been an idea that the first grooves in weapons were not spiralled but straight, but this does not seem to be correct, as all the most ancient grooved weapons known are spirals of more or less rapid turn. Some of them have a variation of twist within themselves. There have been many straight grooved weapons, but the object of them is lost. It has been suggested that they were used for shot, but they could have had no advantage over smooth bores for that purpose, and no advantage over muskets for ball. Nevertheless, the science of ballistics was not generally understood when they were made, and probably a rifled shot gun would have been attractive, as an

advertisement, when it was known that a rifle was accurate with ball, and when the reason of its accuracy was unknown to most people.

Although it was at once recognised that the rifle was far more accurate than the smooth-bore musket, nevertheless three hundred years after the invention of the former it had not come into use for the British Army, and this in spite of the work done with it by the American sharp-shooters in the War of Independence. Even long after Waterloo, the Duke of Wellington was against arming the soldiers with the rifle, and yet he, and every authority, knew of its infinite superiority as a weapon of precision. The reason for this was very easy to understand. The muzzle-loading rifle was no more accurate than the smooth bore unless its ball fitted close and took the grooving. In order that it should do this it had to be forced down the muzzle by means of a stiff ramrod and a wooden mallet. This operation took too much time for war purposes, and it was generally considered that a musket could be used five times for once of the rifle. This was the disadvantage that did not really totally disappear until modern breech-loading was invented, although many attempts were made to get over the difficulty in various ways. One of the principal of these was the screwing of the trigger guard into the barrel, in a hole big enough to take the proper ball for the bore; then the barrel was charged from the muzzle, and loaded with the bullet afterwards from the hole in the breech. This was a clumsy makeshift, which cut away nearly half the barrel at that point, and this the metal of the day was ill able to stand. The other plan was the adoption of the principle of the expanding bullet. The best form of this bullet was that one with a hollowing out behind. This hollow, of course, admitted either the powder or the powder-gas, which expanded the rear portion of the bullet, and forced it into the grooves at the same time as it also forced it forward.

It is extraordinary to consider that the rifle had existed for three centuries and a half before this plan became effective, and made the rifle a much superior weapon to the musket. If any

country had discovered it at the time of Marlborough or Wellington, it would have made that country master of Europe, just as the first use of the breech-loader as a military arm made Prussia and her needle gun invincible, until other nations also armed themselves with the breech-loader.

It has often been said that "vile saltpetre" was the deathblow to chivalry. That was not so; the long-bow and the cross-bow had before this made Jack as good as his master, and as a matter of fact the bow was much more highly valued up to the reign of Elizabeth than the gun was.

Nevertheless, one French writer attributes the loss of the battle of Crecy to the English use of guns, and he goes on to show that, although the French had used cannon in the sieges of castles, they would not employ them against men. The fact that gunpowder was known in Europe long before Crecy, and is *said* to have been used by the followers of Mahomet, and by the defenders of India against Alexander the Great, goes to support the French author's views, that chivalry forbade the use of such a method of warfare.

This is no unsupported view, for Pope Innocent III. forbade the use even of the cross-bow against Christian enemies, but permitted it against Infidels. It was even said that Richard I. was killed by a shot from a cross-bow because he had disregarded the Pope's Bull in the use of the weapon. This common belief well indicates the superstition, or religion, of the people, and is ample to account for the very slow growth of the use of gunpowder up to the time of Agincourt, which was obviously won, like the Black Prince's victories over France, by the English long-bow; and, in the winning, destroyed the dying embers of the spirit of chivalry. That gunpowder did not do this may be gathered from the fact that Sir John Smyth, a general of Elizabeth's army, declared he would take 10,000 bowmen against 20,000 armed with the match-lock of that period.

More than this, a match was made at Pacton Green, in Cumberland, as lately as 1792 with the bow against the gun,

probably the Brown Bess, to test the two for warlike purposes at 100 yards range, and the bow won easily.

General military opinion had then gone against the bow, but obviously there was not much in it, for the rifle was only supplied to the rifle brigade, and not to the general army.

The latter was first armed with the rifle at the time of the Crimea, when the Minie rifle was adopted. A well-tempered sharp arrow could cut through armour as well as the slow bullets from hand guns, but armour remained of some use against both, and it only disappeared as big guns came into general use in the field, which was long after they had been used in and against Norman castles and town walls.

Perhaps, with the exception of the Assyrians and the ancient Egyptians, the most ancient warriors were a boasting, cowardly lot, like the leading gentlemen of Homer, and the still more cowardly understudies who stood still to watch while their chiefs were engaged in combat. Even Goliath advanced to single combat, and his side never fought at all when David's shooting instrument went true. It is not, however, on record that Goliath had a shooting instrument, and it may fairly be urged that this early knight intended to bar shooting, and was a true forerunner of the knights of the Middle Ages, who also attempted to bar shooting by the aid of Pope Innocent III. Passing over those ancient Greek and Israelitish times to the classic period of Greece and Rome, when battles were fought by the whole of the armies engaging, we find that then shooting in any form had very little to do with results. That is to say, the bow and arrow, which became so deadly in the Plantagenet and Lancastrian wars in France, were not relied upon. The reason seems to have been that the classic Greek soldier with armour and target was pretty secure against the arrow, but the knight's horse in the Middle Ages was not, and could not be made so. Incidentally, therefore, it is fair to assume that war had again degenerated, by means of chivalry, to the single combat championship stage, and that the first side to make the whole

army fight won the day, as the British archers won it for the Black Prince, much to the disgust, as well as the defeat, of the French knights.

Until 1515, or thereabouts, when the wheel-lock was invented, the gun could only be used with a match-lock of kinds, and the circling pointer was very much in demand to indicate the exact position of the covey. The sportsman trained his hail-shot loaded gun on the spot and let it off. This form of sport became possible almost as soon as gunpowder was invented, but there is no record of it until much later, when it had become so destructive to game as to be forbidden by edict. Then the flint and steel lock was introduced, so that no sooner had the circling dog come to perfection than he found his business gone, for he was not wanted for the shooter of flying game, at a time when the latter sat well enough not only for the bad marksman, but also for the net as well.

There is a picture of a deer drive, dated 1644, in De Espinar's book, where the sportsman has a heavy gun in a movable rest, but what kind of boring and ignition were employed is not to be discovered. It is possible, however, that both rifling and the flint and steel were employed, for they must have been very tame deer that would have remained in one position long enough, in a drive, to have been done to death by means of any device for quickening up the match-lock. Indeed, the long-bow would have been much the more deadly shooting instrument.

In modern times the long-bow has become a toy, but, even as such, shows itself capable of more accuracy than the musket had. That flying shots were not impossible with either the long-bow or cross-bow has often been proved, and there is one well-known instance where a swallow on the wing was pierced by an arrow, and remained upon it about half-way down the shaft. But when the arrow was a weapon of war the minimum distance for practice for a man was 220 yards, and the flight of an arrow then was very far beyond the powers of the toy bow now used in the pretty game of archery.

The author has practised with both cross-bow and long-bow. As a boy he has had many a shot at a flying pheasant with the former, and although he never hit one, that was probably only because the art of building cross-bows died with those who had need of them.

It is known as a matter of fact that gun metal was very poor stuff when the early cannons were made, and it can be gathered that powder was not of the best, as the proportions by weight of shot to powder were for the biggest cannon as two of shot is to one of powder, and for the smallest bores as $\frac{1}{2}$ lb. of shot is to $\frac{3}{4}$ lb. of powder, and to shoot this 8 oz. of shot the weight of gun required was 300 lbs., and the bore 1 inch, or about five times as much weight as we should require now for that weight of shot, for which we should not use $\frac{3}{4}$ lb. of powder, but a couple of ounces would be ample. The only proportions of powder and shot at all like these that have been used in modern days are in some of the gun-proving charges and loads, where there was a good deal of windage between the ball and the walls of the barrel, and this is a fault in economy that the Middle Age gunners were compelled to adopt, and it probably accounts to some extent for their amazing charges of powder for the weights of shot employed, so that the powder was probably a good deal better than these proportions suggest, and the metal of the guns a good deal worse.

THE CHOICE OF A GUN

AFTER the purpose for which it is intended, the primary factor in the choice of a gun is the length of the purchaser's pocket, and so vast is the range of prices that the man with only a few pounds can possess himself of a serviceable, if not elegant-looking, or a perfected and well-balanced weapon. If the price is of no consequence, the choice is easier, because the number of really high-class makers, already limited, and growing smaller, the bounds of selection are therefore correspondingly diminished. Much will therefore depend upon the name, the reputation, and the tradition of the firm.

A son of a shot will usually follow in his father's footsteps as regards his patronage, unless, of course, some maker has produced something so much more superior and kept himself at the head of the times instead of hanging on to the tails of a more or less moss-covered reputation. "Best guns"—and these words need (especially at the present time) every emphasis—are primarily very costly, but, like all the best of things, they are in the end the cheapest. Prices will vary little between one hundred to one hundred and twenty-five guineas each, and for a pair twice that amount. The old rule that prices should gradually fall when the number is increased, does not apply to first-class, hand-made guns. On the contrary, they ought to advance. Why? Because of the difficulty in getting two guns which equally apart as to numbers 1, 2, and 3, are in fit balance and shooting properties indistinguishable, save perchance the colouring and figuring of the stock.

A gun made by a first-class house is also a considerable asset as a second-hand gun, when circumstances or a desire

exists for "the very latest," prompt its disposal, especially if it be made by a firm who only make one quality and retain one price.

If the purchaser decides on a best gun, he will be "fitted" according to his physical proportions, his eyesight, and his personal peculiarities, if he has any. Any good maker will prefer this course, not only for the purpose of satisfying his customer, but for the sake of his reputation, which he holds sacrosanct.

There are some shots who can shoot tolerably well with any gun, but these men are few. If it is only a matter of the length of stock, the task is more or less simple, provided that when a reduction is made, weight should be secretly added, so that the balance, which is one of the essentials in a perfect gun, is preserved. If an addition to the length of the stock is needed, a reduction will be made elsewhere in the stock for the same purpose. Where it is a case of an alteration of the cast "off" or cast "on," re-stocking is the best and most efficient. The old method of steaming is not recommended. Cross-eyed guns are scarcely worth the while with any side-lock action.

Much has been written about the rival merits of Anson and Deeley action, but the fact remains that all the best West End and the best provincial makers still stick to the side lock. The merits claimed for the Anson-Deeley are: (1) it is simple; (2) that it is cheaper; and (3) that it is stronger.

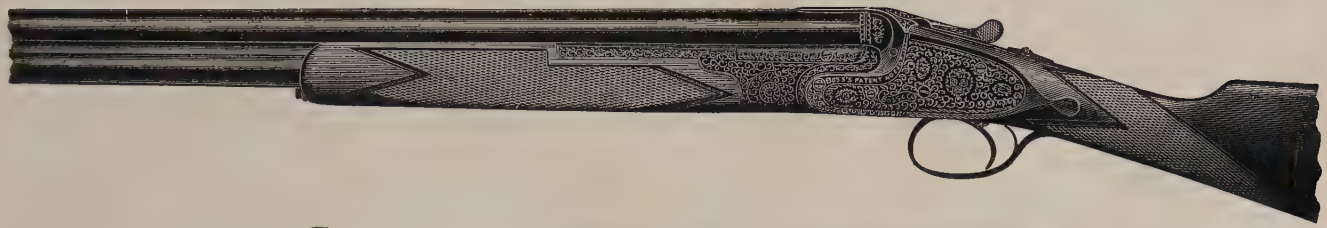
The writer is prepared to accept claims 1 and 2, but certainly not claim 3.

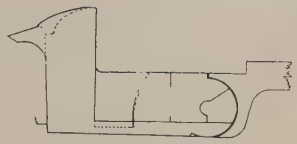
The task of fitting a client for a gun is far easier than it was thirty-five years ago. At that time the "Try-Gun" was in the embryonic stage. The first was, I think, made by W. P. Jones, of Birmingham, but vastly improved by Mr. John Robertson, whose gun can be used as well in the field for ordinary game purposes, as for making patterns on the target, and is now just as applicable to over and under guns as to the ordinary type of double-barrel guns.

As to the best bores, the question is merely one of choice

THE BOSS TRY GUN

A BOSS O.U. GUN





THE BOSS FASTENING

A JOSEPH LANG & SON
"UNDER AND OVER" WITH HOOK AND BOLT FASTENING

THE TRY GUN IN ACTIVE USE IN THE FIELD

or fancy. Some advocates of the smaller bore, such as 20 bores and 28 bores, grow pathetically cranky over their choice. Yards and yards of effusive literature will be found in the Sporting Press when the fever breaks out concerning the wondrous, almost miraculous, performance of these small bores, but much of what is claimed for them must be taken *cum grano salis*. Small bores are no doubt handy weapons, and when weight comes in for consideration, as it does to men in years, they are preferred.

A 20 bore is the favourite weapon with lady shots, but the number 12 is undoubtedly the orthodox game and pigeon gun.

Twelve bores with 26-inch barrels are made to-day weighing 6 lb., but their critics say they "kick"; so will any gun, be it a 20 or a 12, if the gun does not fit or the stock is not firmly planted on the shoulder.

If ever the 12 bore should lose its pre-eminence, indications point to the possibility of its place being taken by a 14 or a 16 bore—most likely the 14, for which much is to be said. Its handiness cannot be denied, whilst in appearance its lines seem to be more symmetrical than older types of 12. The terms "cylinder," "improved cylinder," "modified choke," and "full choke" are gradually falling into desuetude, and properly so, since what one person would interpret a "modified choke," another would designate as a half-choke.

The method of to-day is to name the degree of choke by the percentage of pellets placed in a 30-inch circle at 40 yards. Thus, if a true cylinder, which is known as a 40 per cent. pattern, will place 122 pellets out of a charge one and a sixteenth ounce of No. 6 shot in circle prescribed, an improved cylinder, known as a 50 per cent. pattern, will place 145, and so on, as the following tables will show.

[TABLES

Details of Shot Sizes

Designation.	Pellets per oz.	Weight per Pellet.	Diameter.	w in lb. d^2 in in.
		grs.	in.	
L G	5	87·5	·388	·0830
M G	7	62·5	·347	·0742
S G	8	54·7	·332	·0709
Special S G	11	39·8	·298	·0640
S S G	15	29·17	·269	·0575
S S S G	20	21·89	·245	·0520
S S S S G	25	17·50	·227	·0485
S S S S S G	30	14·58	·214	·0455
A A A	35	12·50	·203	·0433
A A	40	10·94	·194	·0415
A	50	8·75	·180	·0386
B B B	60	7·29	·170	·0360
B B	70	6·25	·161	·0344
B	80	5·47	·154	·0329
1	100	4·38	·143	·0306
2	120	3·65	·135	·0286
3	140	3·12	·128	·0272
4	170	2·57	·120	·0255
4½	200	2·19	·113	·0244
5	220	1·99	·110	·0235
5½	240	1·82	·107	·0228
6	272	1·61	·102	·0221
6½	300	1·46	·099	·0213
7	340	1·29	·095	·0204
8	450	·97	·087	·0183
9	580	·75	·080	·0167
10	850	·51	·070	·0149

The above shot sizes have been compiled from the lists issued by the manufacturers. Great discrepancies exist, but the selected figures strike a fair average of actual conditions.

Pellets in Game Charges

Oz. of Shot.	Size of Shot.						
	4	4½	5	5½	6	6½	7
1½	255	300	330	360	408	450	510
1 7/16	244	288	316	345	391	431	489
1⅜	234	275	303	330	374	413	468
1 5/16	223	263	289	315	357	394	446
1¼	213	250	275	300	340	375	425
1 3/16	202	238	261	285	323	356	404
1⅛	191	225	248	270	306	338	383
1 1/16	181	213	234	255	289	319	361
ONE	170	200	220	240	272	300	340
15/16	159	188	206	225	255	281	319
⅞	149	175	193	210	238	263	298
13/16	138	163	179	195	221	244	276
¾	128	150	165	180	204	225	255
11/16	117	138	151	165	187	206	234
⅝	106	125	138	150	170	187	212
9/16	96	113	124	135	153	169	191
½	85	100	110	120	136	150	170

True Cylinder (=40 per Cent.) Patterns

Oz. of Shot.	Pellets in 30 in. Circle at 40 Yards for Different Sizes of Shot.						
	4	4½	5	5½	6	6½	7
1½	102	120	132	144	163	180	204
1 7/16	97	115	126	138	156	172	196
1⅜	94	110	121	132	150	165	187
1 5/16	89	105	116	126	143	158	178
1¼	85	100	110	120	136	150	170
1 3/16	81	95	104	114	129	142	162
1⅛	76	90	99	108	122	135	153
1 1/16	72	85	94	102	116	128	144
ONE	68	80	88	96	109	120	136
15/16	64	75	82	90	102	112	128
⅞	60	70	77	84	95	105	119
13/16	55	65	72	78	88	98	110
¾	51	60	66	72	82	90	102
11/16	47	55	60	66	75	82	94
⅝	42	50	55	60	68	75	85
9/16	38	45	50	54	61	68	76
½	34	40	44	48	54	60	68

Improved Cylinder (=50 per Cent.) Patterns

Oz. of Shot.	Pellets in 30 in. Circle at 40 Yards for Different Sizes of Shot.						
	4	4½	5	5½	6	6½	7
1½	128	150	165	180	204	225	255
1 7/16	122	144	158	173	196	216	245
1⅜	117	138	152	165	187	207	234
1 5/16	111	132	145	158	179	197	223
1¼	107	125	138	150	170	188	213
1 3/16	101	119	131	143	162	178	202
1⅛	96	113	124	135	153	169	192
1 1/16	91	107	117	128	145	160	181
ONE	85	100	110	120	136	150	170
15/16	80	94	103	113	128	141	160
⅞	75	88	97	105	119	132	149
13/16	69	82	90	98	111	122	138
¾	64	75	83	90	102	113	128
11/16	59	69	76	83	94	103	117
⅝	53	63	69	75	85	94	106
9/16	48	57	62	68	77	85	96
½	43	50	55	60	68	75	85

Half Choke (=60 per Cent.) Patterns

Oz. of Shot.	Pellets in 30 in. Circle at 40 Yards for Different Sizes of Shot.						
	4	4½	5	5½	6	6½	7
1½	153	180	198	216	244	270	306
1 7/16	146	173	190	207	235	259	293
1⅜	140	165	182	198	224	248	280
1 5/16	134	158	174	189	214	236	267
1¼	128	150	165	180	204	225	255
1 3/16	121	142	157	171	194	214	242
1⅛	115	135	148	162	184	203	230
1 1/16	109	128	140	153	173	191	217
ONE	102	120	132	144	163	180	204
15/16	95	112	124	135	153	169	191
⅞	89	105	116	126	143	158	179
13/16	83	98	108	117	133	146	166
¾	77	90	99	108	122	135	153
11/16	70	82	91	99	112	124	140
⅝	64	75	82	90	102	112	127
9/16	58	68	74	81	92	101	115
½	51	60	66	72	81	90	102

Full Choke (=70 per Cent.) Patterns

Oz. of Shot.	Pellets in 30 in. Circle at 40 Yards for Different Sizes of Shot.						
	4	4½	5	5½	6	6½	7
1½	178	210	231	252	285	315	357
1 7/16	170	202	221	241	274	302	342
1⅜	163	192	212	231	261	289	328
1 5/16	156	184	202	220	249	276	312
1¼	149	175	192	210	238	263	298
1 3/16	142	167	183	200	226	249	283
1⅛	134	157	174	189	214	236	268
1 1/16	127	149	164	179	202	223	253
ONE	119	140	154	168	190	210	238
15/16	112	132	144	158	179	197	223
⅞	105	122	135	147	167	184	209
13/16	97	114	125	137	155	171	194
¾	90	105	115	126	143	158	179
11/16	82	97	106	115	131	144	163
⅝	75	87	97	105	119	131	148
9/16	67	79	86	94	107	118	134
½	59	70	77	84	95	105	119

Perhaps the most difficult decision in the choice of a gun will be when it comes to a question as to whether it shall be an over and under barrelled gun or the orthodox side-by-side barrelled gun. I have heard the praises of the former, and its only "objection" is that it is unorthodox. Since doxy and orthodoxy are the most illusive and the most mischievous words in our language, I will deal with the unorthodox gun on its merits. It is the quicker in action; its alignment is more accurate. It shoots a bit higher than the side-by-side barrel gun, because its axis of stress is more direct on its facing than the "hooked" breech-loader fastening. A momentary study should convince the most sceptical on this point. It answers forthwith and without equivocation the question of the utility or the non-utility of the cross bolt. In the side-by-side barrel gun, with its bearing below the axis of strain under a breech pressure of about 3 tons per square inch, it stands to reason that there must be a downward dip at the extreme ends of the barrel. It may be slight, and perchance of little consequence, when this kind of fastening is as near perfection

as mechanical science can make it. But how often is this degree of perfection reached—and when hypothetically reached, how long does it maintain that degree? This illustration will be more exemplified in the case of a rifle with a breech pressure of two to three times that above referred to. Returning to the question of alignment, the simple difference is between pointing at your object with one finger or three, because it is only the poking game shot that looks along the rib. The best shots never consciously see the barrels at all; their eye is on the quarry, and time and swing are part and parcel of their mental calculations and movement. For this and other reasons I would recommend to the beginner a cheaper, single-barrelled gun, and advise him to rely on that one barrel. When proficient in the use of that, he will, or should, make equally perfect with a double-barrelled one.

Some shots appear to have no real appreciation of the value of the first barrel, but depend upon the "long reach" of the second. This is a dual folly: first, it is not economic, and, secondly, it is not real skill, for unless both barrels "tell," a cartridge is wasted and a bird is lost.

Patterns

There is no wisdom in being satisfied or put off with anything less than perfect central shots of the shot gun. The relative position of the shot centre in regard to a small bull's eye is not easy to put into figures, but it can be grasped by the mind at a glance. The author has seen some close-shooting shot guns that only put the edge of the 30-inch circle of shot on to the bull's eye. This represents an inaccuracy of 15 inches, and is very bad indeed, but 3 inches of inaccuracy is more than equally bad, because it ought not to exist; it is the worse because it is so difficult to find out

Were it not that the shot strings out into a long column with as much as 30 feet between the first and the last pellet at 40 to 50 yards range, it would be barely possible to kill

at all when the pace of the game makes great allowances in front necessary.

This may be said: that 3 inches of inaccuracy is not much when many feet have to be judged, and that is perfectly true, and if the gun's 3 inches of inaccuracy were always in the same direction as the game is going—that is, 3 inches too forward or too backward—there would be nothing in it to trouble about; but it is just as likely to be an error at right angles with the line of flight of the game, and then it does matter very much indeed. Even if a miss does not result, but if the aim is true, the game will then be made to fly through the thin part of the circumference of the shot column. For instance, if game is coming directly over the shooter, and a gun inaccuracy of 3 inches makes him shoot to right or left of the line of flight, that error is increased by his own inaccuracy or the "curl" of the game, which together may easily accomplish the other 12 inches, and then the game would be outside of the column of shot of a choke bore at 40 yards. A full choke has not a killing circle for straight going-away game of more than 26 or 28 inch diameter at that distance. On the contrary, a true cylinder has a killing circle of 40 inches.

This appears at first glance to be a very great advantage to the cylinder user, but in practice there is not much in it, provided the choke bore shoots truly to centre. If it does not, it is absolutely worthless, whereas the cylinder, with an equal fault, is a bad gun but not worthless. The reason of this is that the cylinder spreads more than the choke. The "full choke" always clusters its shot in the centre, and although the aim of gun-makers may be to get an even pattern, it cannot be done with a full choke gun, and would not suit everybody if it were done.

The author is inclined to think that a cylinder, or modified choke bore, is better than a full choke for any distance or purpose for which a full choke bore, with an even distribution of pellets, is better than another with a central clustering of pattern. Possibly pigeon shooting is an exception; because there is no use in killing outside the boundary, so that very

long shots are not much wanted, and quick, hard shooting and an even, large pattern are required. But with game, accuracy of aim is preferable to extreme quickness, if either has to be sacrificed to any great extent. You go out to shoot to please yourself, and nothing will accomplish that pleasure so certainly as constantly killing game at distances that other people cannot reach. Tall pheasants and high wild duck try a gun as well as a gunner, and if the latter can keep in the line of flight he can shoot at some angles and at slow birds twice as strong with a choke as with a cylinder, but the timing of the shot is not as easy for one as for the other.

The shot spreads laterally nearly half as much again for the cylinder, but if you can keep your gun in the direction of the line of flight, that extra lateral spread will only help you for fast birds crossing at right angles. This is the least difficult thing to be done in killing driven game. The most difficult is accurately timing the shot, and here the gunner has the advantage of the longitudinal spread of the shot; in other words, a column of pellets some 30 feet long, at 40 or 50 yards, is sent in front of the game, which has to fly through the column as the latter passes the line of flight. The cylinder has slightly the longer column, and the column is slightly thicker through.

Correct timing implies that no part of the column of shot passes the bird before his head is in it, or after his legs are out of it. But this absolute accuracy of measuring the allowance in front, as well as timing the "let off," must be very unusual.

It may be said that it is not easy to keep the gun in the direction of the line of flight, but the author cannot agree to that, except when the game swerves after the "let off." If it does that, a spread of shot the size of a barn door would probably miss it, and the one-third bigger lateral spread of the cylinder than of the choke bore will not assist once in a hundred times.

These views, although not perhaps expressed, are largely acted upon in practice. Soon after choke-bore guns came in they became very unfashionable for game shooting, and the

author was himself dreadfully unfortunate, for his form dropped 50 per cent. But the reason was that his first choke bores were not central shooters, and it was then very difficult to get guns of that boring that were true. That it was no fault of choke bores as such, the author proved by having his guns rebored, and although they afterwards shot even closer than before, they killed in the new condition

One fault which is very bad in choke bores, and counts against shooting straight-going and straight-coming game well, far more than with cylinders, is that of patches without any shot in them in the outer edge of the circle. What is meant here is not a misdirection of the load but an erratic spread of it. In a close-shooting weapon this fault is almost as bad as a misdirection, but differs in this, that the patch varies its position with each shot. These patches sometimes extend from the outer edge to very nearly the centre of the pattern, and consistent shooting when they occur is impossible. They are not chance happenings, and can be obviated by good boring and good loading. The author thinks they most often occur when the shot can be shaken in the cartridge, and it may be that a size of pellets which do not lie evenly on the outer circle on the wad assist in deforming the pattern.

But theory is of no use, and it is the gun-maker's business to sell a gun that he can show has none of these faults. Whether he overcomes them by a change in size of shot, quantity of them, or in an alteration of brand of powder, matters nothing to the shooter, and is not his affair. Enough has been said when the gun-buyer is placed in a position that it took the author many years to arrive at in regard to the choke bore, namely, that everything on the plate that is bad is not the fault of the shooter, but of the gun-maker.

There is another advantage of the choke bore. It shoots No. 5 shot at 50 yards as hard as No. 6 is shot by a cylinder at 40 yards, and the pattern will be quite equal at 50 yards with the large shot to that of the cylinder's small shot at 40 yards.

This is very important in shooting at straight coming or

going grouse. The farther off the first bird can be taken, the more certainly will the others be killed. No. 6 shot has enormous energy when the speed of a quick advancing bird is added to the speed of the shot. If it gets in the bird, it will go a long way through him; but when grouse are coming low, and dead straight to the gun, they glance the small shot like a shower of hail upon a duck's back. Consequently more heavy shot will get in, although fewer will hit.

The kind of gun to be bought can hardly be determined until the shooter has settled what size of pellets he wants to use at various game. Messrs. Kynoch sell more than twice as many No. 5 shot as any other size. No. 6 comes next, and Nos. 7 and 5½ are nowhere.

With a cylinder gun only placing 100 pellets of No. 6 shot in the 30 inch circle at 40 yards, one could not expect great work from No. 5 pellets on birds as small as partridges walked up. The pattern would be too open at 40 yards, and the penetration unnecessarily high at 25 yards.

Some, at least, of No. 6 shot has penetration for a slow partridge flying dead away at 40 yards. With a very quick driven bird shot at behind, it has not more than enough penetration beyond 30 yards. The pace of the retreating game reduces the energy of the impact, but there is very little glancing off the feathers when they are struck from behind. The author is inclined to say that in shooting coming game all glancing is away from the game, and from behind all glancing from feathers is into the bird. He has himself heard the clatter of the shot on a straight-coming duck at about 30 yards when no damage whatever was done. At a low skimming partridge coming straight for an open gateway in which the writer was standing, he has shot, as at a sitting mark, for there was neither swerve nor rise or fall; he has seen the earth kick up all round the bird at about 25 yards, and has not been any nearer bagging the game. Surely nothing but glancing shot can account for such escapes.

A bird partly crossing can be killed farther away, but a partridge coming dead on, in spite of the increase of impact

caused by its speed, is far out for a cylinder and No. 6 shot at 30 yards, but with a choke bore and No. 5 shot it is well within range at 40 yards. Then a fast going-away driven bird is 10 yards nearer than it looks if you have No. 5 pellets in the gun, and a good deal farther off than it looks if you have No. 6.

So far only the actual bringing down of game has been considered, but there is the question of ethics too. With all shot there is some distance at which a body shot ceases to be effective, and when killing must depend on hitting a vital exposed part, or the wing. As the body is more than twice as big as these exposed vitals, namely the head and neck, it follows that the body will be hit twice as often as these vital parts. Beyond the distance at which body shots will kill, it follows that the shooter wounds twice for every head he bags. Consequently there is a wounding distance for each kind of shot pellet for straight going and coming game.

This wounding distance, for No. 6 shot, the author would be inclined to place at all ranges beyond 30 yards and up to 100 yards; for No. 5 shot, all distances beyond 40 yards and up to 120 yards. But as most people do not shoot at game beyond 50 yards, for practical purposes the wounding distance is from 30 to 50 yards with No. 6, and from 40 to 50 yards with No. 5 shot. Full feathered partridges are the birds alluded to. August grouse can be killed farther away with much more certainty.

In all the public London trials of guns the patterns of cylinders have not averaged as high as 100 pellets of No. 6 in the 30 inch circle at 40 yards range. With 1¼ oz. of No. 6, of 270 pellets to the ounce, about 250 pellets in the same circle have been frequently obtained at the same 40 yards range from choke bores. But the majority of guns sold as cylinders now will put as many as 120 pellets in the circle, and the author has seen one of Holland's put 160 pellets in that circle. In this gun there was no noticeable choke bore when a barrel gauge was used at all distances within 8 inches of the muzzle. The author did not attempt further to learn how this barrel was bored, and it would not be fair to

expose it if he knew, which is not the case. But now that the principle of boring is well understood, there appear to be several methods by which a similar result would be possible. The barrels are known to stretch very considerably under the pressure of the powder-gas, and consequently any treatment of the barrels at the muzzles that would prevent them stretching with the rest of the barrel would act, more or less, like a modified choke. This might be done perhaps by an external thickening of the barrel, or by a hardening of the metal just at the right spot.

However, to prefer a cylinder that gives a high pattern to a modified choke bore that does the same, is only a fad. The former is difficult to obtain, and the latter is everywhere; and it is not the modified choke that so often is made to shoot untrue to centre, but the full choke.

The disadvantage of the choke-bore pattern is that it may plaster the game at distances nearer than the cylinder does. To compare the two patterns made at 20 yards, it is difficult to believe that the choke is almost as free from plastering as the cylinder. As a matter of fact there are several reasons for the well-known surprise that it does not often plaster feathered game.

The birds are not often coming straight at the gun nor going quite straight away from it, and any tendency to cross the line of aim is equivalent to allowing the game some benefit for any slight inaccuracy of timing the shot, and any wrong allowance in front. For instance, perhaps 5 inches too much allowance in front, with otherwise correct timing, at 20 yards, might very well allow half the shot column to go past a slow bird before he flew into the remainder of the shot column, which would be equivalent to shooting at a motionless bird with only half the pattern.

On the other hand, a very fast bird may fly right through the shot column before more than half of it has passed his line of flight. When the bird is caught by the centre of the head of the column at 20 yards range, he has but 10 inches to fly to get out of the line of flight of the shot from a full choke bore.

The last pellets in the load will not be travelling more than 700 feet per second, and fast game is often going at 100 feet per second and more, although newly started game in still air may not often exceed 60 feet per second. But probably the real reason why good shots especially do not plaster their game at near distances is that they always shoot well in front, with a view to hitting only in the head and neck. At short range the slowest pellets are quite equal to killing whenever they hit straight for a vital part, exposed or otherwise. A shot aimed well forward with the intention of almost missing, by premature arrival of the pellets on the line of the bird's flight, is almost sure to result in the cleanest kind of kill, brought about by two or three shot pellets in the head and neck and none anywhere else.

This also is often accomplished even at long distances, but not in the same way. Then the shot that succeeds must be well timed to get the bird's body into the thickest of the pellets, and one of the reasons why the body is not plastered is that from most angles of impact, on a coming bird, the body shots glance off, and only the head, neck, and wing shots tell. The only great chance of smashing winged game that occurs is in near shots at going-away game, and then, whether a man holds a cylinder or a choke bore, he will assuredly give lots of "law," even if, in doing so, the game passes out of sight.

There is an idea that the killing circle from a gun can be mapped out by geometric progression. That is to say, that if lines are drawn from the muzzle to the extremity of a 40 inch circle at 40 yards, you will be able to measure off, or calculate, the killing circle for straight-away game at any distance. That is not so. At the nearer distances the size of the killing circle is regulated by the pellets that, at 40 yards, are outside of it altogether. There they are too thinly scattered to count for chances. Thus the killing circle of a cylinder and of a full choke have no relationship to each other, or to geometric progression of the spread of pellets for each distance.

The author has measured many patterns at different distances, and he believes that the following table shows very truly the diameters of the killing circles covered, on the basis of

that pattern which was regarded as thick enough to kill game in the cylinder days. That is to say, the latter sort of gun was tried at 40 yards where it spread fairly evenly over a 40 inch circle. But its proper distance was 30 yards, and at that range nothing else at any other distance gives the shooter an equal chance with No. 6 shot.

FOR STILL, OR STRAIGHT AWAY, OR STRAIGHT COMING GAME. THE SIZE OF THE KILLING CIRCLE BASED ON A MINIMUM 100 PELLETS IN A CIRCLE OF 30 INCH DIAMETER

Description of gun and size of shot.	At 20 yards.	At 30 yards.	At 40 yards.	At 50 yards.	At 60 yards.
Cylinder and No. 6 shot .	22 in. A	35 in. A	40 in. B	none	...
Even spreading choke bore and No. 6 shot	20 in. A	26 in. A	30 in. B	37½ in. C	45 in. C
Centre clustering choke bore and No. 6 shot	20 in. A	25 in. A	28 in. B	34 in. C	40 in. C
Cylinder and No. 5 shot .	21 in. A	34 in. A	none	...	...
Even spreading choke bore and No. 5 shot	19 in. A	25 in. A	30 in. A	37½ in. B	none
Central clustering choke bore and No. 5 shot	19 in. A	24 in. A	27 in. A	35 in. B	none

In the above table each circle of shot has been marked with a reference letter, which is intended to imply—

A, that all pellets will have enough strength to kill if they only hit the body, and in direct line for a vital.

B, that only the fastest pellets in the load will have enough strength to kill by body shots, and that at least half the pellets will only have enough strength to kill if they hit head, neck, or wing.

C, that none of the pellets will kill by body wounds, but only the small number that chance to hit head, neck, or wing.

The pellets that come under the description applied to C can be greatly extended beyond the distances named, and at ranges to which it would be foolish to apply the term "killing circles." Thus the author has seen a roe deer killed at 60 yards with No. 6 shot from a 12 bore. Lord Walsingham has made four consecutive shots with No. 5 shot at wild ducks at an average range of about 88 yards, or, to be accurate, at 84½ yards, 89 yards, 84 yards, and 114 yards. But these lucky shots in vital spots do not affect the question, except to show that it is difficult to apply a limit to the killing power of even weak pellets when they strike head, neck, or wing. Outside the zone marked A one is certain to do some wounding without killing the game, but although many pellets will hit without being straight for vital spots, others will probably kill the same bird. But in the C zone it is always two or three chances on wounding to one chance of killing.

The reason for attempting to draw a distinctive line between these zones for the different guns and loads is that there is far too much unhealthy, random shooting at game, which gives rise to prolonged agony, while the sportsman is dining well, and, as he believes, sleeping the sleep of the just. Even on the baser score of economy and next year's sport, it is wise to wound no more game than human blundering compels, and not to lay ourselves out to wound by attempting to kill when the chances are so bad that the wild shooter would not risk them upon a horse-race, much less in a mere commercial speculation.

There has often been controversy on the difference of penetration from a choke bore and a cylinder. When penetration was taken by recording the number of sheets of paper, or boards, pierced by one pellet, or even by three, the choke bore always won. But really this was merely a double counting of pattern, because when two guns shoot with the same velocity of shot, that which has the best pattern will also have most pellets through. That is how it came to be settled by the public

London gun trials that choke bores had materially the most penetration. As a matter of fact, nobody knows which has most penetration. Sometimes the number of sheets pierced by half the shot which hit a penetration testing pad will be in favour of one, and sometimes of the other gun, and moreover the difference in piercing by the pellets of the same discharge may be as much as two to one.

Chronographic testing for time over a range has never proved very satisfactory, for the instrument makes but one record of time for 300 different pellets, which are known to vary in velocity over some ranges by 300 foot-seconds, and in striking velocity by 200 foot-seconds.

This was brought out by the late Mr. Griffith, who as manager of the Schultze gunpowder works had great opportunities, and took them. Powder-makers may very well use the chronograph in testing powders at 10 yards range. At this range Mr. Borland of the E.C. Company informed the writer that he could never find a difference between small shot and large pellets; which goes to prove that at the distance they have not scattered longitudinally enough to make the chronograph the absurdity it becomes when it records one time for 300, all various.

But once the chronograph was used for small shot on the right principle. This was when Mr. Griffith applied it to his revolving target experiments.

He did this to discover the longitudinal spread of the shot pellets at various distances. If ever the chronograph could be used for taking differing shot velocities, this appears to be the way. But it has never been repeated, and some results appear to throw doubt upon their own accuracy. The various lengths of the shot spread on the targets moving at 200 f.s., at right angles with the line of fire, were as follows upon the top lines. On the bottom lines in the table the shot pattern spread, caused by the 200 feet per second, is multiplied by the ratio of greater speed of shot than the 200 foot-seconds of the revolving target. So that in the following table the bottom lines, in respect of each gun, represent something near the true length of shot

Description of gun and load.	Length of shot column at these ranges in yards as previously accepted.						How the length of column was obtained.
	10	20	30	40	50	60	
Choke bore 12 gauge, 49 grains Schultze, and 1⅛ oz. shot . .	2¼ feet	4 feet	6¾ feet	3¼ yards	4¼ yards	4½ yards	By actual measurement on the Griffith revolving targets, assuming velocity of shot to be only 200 f.s. —the same as that of target
	11 ,,	19 ,,	27 ,,	33 feet	35 feet	...	By multiplying the length of actual measurement as above by the ratio of shot speed at the end of the range above the 200 f.s. of the revolving targets
The same gun and load, but with only 42 grains Schultze powder . .	20 inches 8 feet	40 inches 15 feet	6 feet 22 ,,	9 feet 28 ,,	12 feet 29 ,,	4¼ yards ...	As in first line above As in second line above
Cylinder gun 12 bore, 42 grains of Schultze powder, and 1⅛ oz. shot	2¾ feet 11 ,,	5 feet 22 ,,	7½ feet 28 ,,	4 yards 35 feet	4½ yards 30 feet	4¾ yards ...	As in first line above As in second line above

This table is only inserted because the figures contained in it have hitherto formed the bases of public knowledge and calculation; it is corrected and superseded by another on page 46. Its errors consist in no deduction for the natural spread of the pattern and in the multiple adopted being based on the striking velocity of the first five per cent. of pellets.

column at each distance. The speeds taken in the foregoing table can be gathered from the Griffith figures on the next page. But if, for the 30 yards range, the truer mean speed of the shot column is wanted, this is equal to the striking velocity of the most forward pellets and the velocity of the rear of the column added together, and divided by two. For this calculation there is a slight inaccuracy originating in the following tables, because the striking velocity of the rear pellets has been taken at the full range, instead of at the length of the shot column less than the full range. This position can only be found by trial and error. It will vary the results by a yard or two. Inches have been disregarded in the tables.

It is often said that we want guns to send their shot up all together, but if we had so to time our "letting off" as to cause the game to fly on to a knife edge, with the shot spread out like a tea-tray, it is doubtful whether we should hit oftener than with a rifle. Lord Wolseley tells of seeing an officer who by means of a soldier's rifle killed a wild goose flying high overhead.

Keeping the line of flight for such a shot would not be difficult, but the timing and allowance in front could not often be so cleverly arranged. That is the reason why there is a good deal of doubt whether we want to decrease the length of shot columns, and besides, if we did wish it, probably it could not be done. It is observable that the extra half-dram measure of powder materially increased the choke bore's lengths of shot columns. It also had a very great influence in the increase of velocity at all distances.

The length of the column of shot from the cylinder gun is longer than the spread from the choke bore, and the longer the range the longer is the column; but strangely, at long range, according to these trials, one striking velocity of the first pellets in the load was exactly the same as that of the last pellets to strike the revolving target, although mean velocities for the range were very different. This almost shakes confidence in this chronographic record, but as the penetration tests always show more variation between pellets than the

differences in any of these revolving target and chronographic records, it may be that the apparent paradox of pellets getting farther behind but nevertheless maintaining the same speed as those in front can be explained by a constant change of leaders, and if so, also of followers necessarily.

These phenomena do not occur except at the extreme distance of 55 yards, and they are totally absent even at that distance with the choke bore and 49 grains charge. It seems therefore only to be possible when the pellets have dropped to a low velocity. At shorter ranges there is sometimes an impact difference of 200 feet a second between the pellets of the same load. So that it is material to know the force of the whole charge, and the time up the range of the leading pellets is no guide, as differences equal to 320 f.s. have occurred in one load.

As these are the only chronographic tests of shot pellets ever made with a view of finding out what really takes place,

STRIKING VELOCITY AT VARIOUS RANGES IN FOOT-SECONDS

on Mr. Griffith's authority

	By the fastest 5 p.c. of pellets.	By the next 25 p.c. of pellets.	By 45 p.c. of pellets.	By the mean of the bulk.	By the last 3 p.c. of pellets.
15 yards { choke (42)	1013	987	974	952	813
15 yards { choke (49)	1050	1013	1042	965	798
15 yards { cylinder (42)	1003	955	962	923	742
25 yards { choke (42)	825	792	779	748	684
25 yards { choke (49)	890	840	806	809	699
25 yards { cylinder (42)	810	769	750	724	615
35 yards { choke (42)	691	661	660	632	523
35 yards { choke (49)	737	699	699	672	564
35 yards { cylinder (42)	672	632	636	619	504
45 yards { choke (42)	581	560	549	536	489
45 yards { choke (49)	633	598	592	573	527
45 yards { cylinder (42)	561	538	523	494	488
55 yards { choke (42)	377	365	362	344	342
55 yards { choke (49)	478	462	457	427	418
55 yards { cylinder (42)	382	374	378	370	382

the striking velocities of the various proportions of the load at different distances are given here. But although this represents the only use of the instrument for this purpose, on truly scientific principles, ever recorded in print, the author would be sorry to affirm the absolute accuracy of the instrument on this or any other occasion, although the relative accuracy of one record to the other is much more likely to be correct.

The (42) and (49), after the description of the gun in the table on p. 41 refers to the load of Schultze powder, and in all cases 1⅛ oz. of shot No. 6 was used.

In order to arrive at striking velocity from these trials, it was necessary to compare the time taken at one range with that taken at another range by a different cartridge.

That in some cases the leading pellets are recorded as slower than those behind them, is not, as would at first sight appear, an absolute disproof of accuracy, because it may be that the leading pellets are constantly dropping back, and others are becoming leaders. Obviously the fastest pellets lose speed at the greatest rate, and obviously, also, the leading pellets get least help and give most to their neighbours, by setting up air disturbance, or a breeze, in the direction of the load.

We all know from paper pad and strawboard tests that the penetration of pellets from the same discharge often varies as two to one. Some of these records do not confirm this; but as they can only be accurate on the assumption of that which must be true—the fluctuation of relative positions of the pellets in flight—this adds to their value, because that assumption is also required to explain the greater known variation in penetration than the most indicated in these tables of speed.

The above remarks have been founded on the comparison of the chronographic time of one load at one distance with that of another discharge fired 10 yards farther away; and the mean speed over the 10 yards has been taken as the striking velocity at the midway distance of the 10 yards. This is how Mr. Griffith worked out the striking velocities. And from his

figures the length of the shot column can only be got at by making some use of a comparison between shots fired at one range and those fired at another. In other words, the length of shot column approximately found, as described, when divided by the difference of time between first and last pellets, brings out the average velocities of the shot column, at the instant of the leading shot striking the target, too high. That is to say, the previous length of column having been found too much, is taken merely as a basis, to indicate the position in the rear at the length of the column away from the target at which to search for the speed of the lagging pellets, and, with these found, and the speeds of the leading pellets already found, from the table upon page 41, the average speed has been discovered, and actual time between first and last being known, the length of column has been re-found in a way that must be as accurate as any records can be that are based on two different discharges and the chronograph.

Taking the length of the column of shot, it is clear that the difference of time in seconds between the first and last arriving pellets, divided by the length of the column in feet, will give the mean velocity of the shot column at the instant the first pellets struck the target. The amended figures are tabulated on the next page.

It has lately been attempted to show that Mr. Griffith's measurements are not supported by the results on a target passing at 75 feet a second at right angles with the line of fire. But this speed is not enough to prevent the irregular spread of the shot pellets from misleading. In other words, the faster the movement of the target the less will the elongation of pattern depend upon the accident of pattern, and the more it will depend upon the length of shot column and its speed. Besides this, birds at 75 feet per second are not the difficult sort that people want to learn to kill in a wind.

In the following table it is seen that in one case the column is no longer at 50 yards than at 40 yards, and we may be quite certain shot columns are not so in reality:—

Yards of range.	Difference of time of arrival of first 5 per cent. and last 3 per cent. of pellets in fractions of a second.	Length of column of shot as corrected by the method previously explained.	Mean velocity over length of column, and striking velocity at a point half the length of column of shot from the end of the range—		Description of gun and load.
			As found by time from uncorrected length of column of shot.	As found by time from corrected length of column of shot.	
10	·007	...	...	...	Choke bore, 42 grains of Schultze and 1⅛ oz. No. 6 shot.
20	·0145	12 feet	1034	863	
30	·022	16 ,,	1000	726	
40	·036	22 ,,	777	619	
50	·046	22 ,,	630	489	
60	·054	...	...	...	
10	·009	...	...	...	Choke bore, 49 grains Schultze and the rest same as above.
20	·018	16 feet	1055	884	
30	·027	20 ,,	1000	768	
40	·0425	27 ,,	776	647	
50	·05	28 ,,	700	555	
60	·059	...	...	...	
10	·0117	...	...	...	Cylinder gun and 42 grains of powder and shot the same as above.
20	·0222	18 feet	990	812	
30	·034	26 ,,	823	769	
40	·049	28 ,,	714	583	
50	·057	27 ,,	526	484	
60	·057	...	...	...	

The only way that this extraordinary result can be explained is this: Mr. Griffith shot at his revolving targets set behind a hole of 4 feet diameter made in a steel plate, and the question arises, Would not any shot pellets that were only travelling at 382 feet a second drop out by the force of gravity, and never pass through the opening at all at the longer ranges? They would take a considerable fraction of a second to reach the 55 yards range, and pellets would drop a foot by the force of gravity in ¼ second, therefore some of them would not pass through the 4 feet opening. On this assumption, instead of the 50 yards columns of shot being of the lengths stated, they must be very much longer, with a continuous dropping of the weaker shot all up the range.

It is often asked how it happens that so few fast driven birds are wounded. They are either killed or not hit as a rule, even when they are high up. Another query is as often heard: "Why are fast birds more difficult than slow ones?" It appears that one answer can be supplied from the tables already given to both questions. It is often said that it is difficult to lead "tall" birds enough, but the farther away game is, the slower the gun has to move in order to race, and beat it, so that this is evidently not the explanation. Taking the corrected length of the various columns of shot at most of the ranges above 30 yards, and comparing the average speeds of the fag end pellets, as given in the table, with the distance they have to go, while the bird has merely to go from 2 to 4 feet to get out of their line, it will be found that game at 60 feet per second cannot get clear of any part of the shot column if it is timed properly, whereas game at 100 feet per second will clear about 40 per cent. of the length of column in some cases, and only incur danger from 60 per cent. as he flies through it. This seems to be ample reason for the greater difficulty of fast game.

Here are a few examples with the 42 grain charge: allowing 6 inches for half the length of the bird, and adding this to the diameter of flying shot column at various ranges, it is found that in order to get clear while the shot column is passing, the bird at 60 feet per second takes .041 of a second. At 100 feet rate of flight he will take .025 of a second, and the shot takes but .022, so that the game does not get an advantage here at 30 yards. But at 40 yards the slow bird takes .05 of a second and gets no advantage; the fast one takes .03 of a second, and here the time of the column is .036, so that, however good the timing, the bird misses some shot. At 50 yards it is still worse for the slow bird, which takes .062 of a second to get through, and better for the fast one, that takes only .037 of a second, when the shot occupies .046 of a second for the whole column to pass.

There is not much difference for the 49 grain charge from

the choke bore. At 30 yards the shot column takes .027 of a second to reach the distance after the first pellets are up. The 60 feet a second bird takes .041 of a second, and the 100 feet per second bird takes but .025, or a less period than the shot column. At 40 yards the slow bird takes .050 and the fast one .030 of a second, and the shot occupies .042 of a second. At 50 yards the times are .062 for the slow bird and .037 for the fast one, and the period taken by the shot column is .050 of the unit of time; so that at the longer range the best timing possible would only give the game $\frac{37}{60}$ of the shot he would have as a slow bird.

The cylinder bore, with its longer column of shot and wider spread as well, is a little different in effect. At 30 yards the period occupied between first and last pellet is .034 of the second, and the slow game takes .050, and the fast .030 of a second. At 40 yards .049 is the period for the pellets; and .062 and .037 of a second those for the quick and tardy game, so that there is twelve parts in every 49 of the shot rendered useless in spite of the best possible timing and the truest of allowances in front. At 50 yards the shot pellets occupy .057 of a second for the rearguard to come up to the distance, and the game takes respectively .075 and .045 of a second for the slow and the fast. So that, again, one gets all the benefit as if he were still, and the other cannot do so under any circumstances.

In the last case, at 40 yards, every misjudgment of distance to allow ahead by 1 foot is equivalent to .016 of a second off the total of .049 second occupied by the shot column, so that 3 feet of error will be equivalent to a total miss for the slow bird, whereas for the fast bird every foot of error is equivalent to .010 of a second, and 5 feet of error in judgment in allowing in front, may enable you to hit with the tail end of the shot column, but only to wound most likely.

The best shot-gun experiments ever made with the chronograph, therefore, show that if you have to aim 5 feet in front, and do aim 10 in front, you do not necessarily totally miss at 40 yards; whereas if, instead of aiming 5 feet too much

in front, in like circumstances, the gunner aimed 5 feet behind, or, in other words, dead on the mark with a still gun, a hit would be impossible: the game would never be in the line of the shot after the trigger was pulled. This would be so, even although the gun was following round with the bird; so as to ensure no loss consequent on the time occupied by the pull of the trigger. It is clearly better to aim greatly too much in front than a little too much behind.

Even before the author ever engaged in driving game, he had shot at the first bird of a covey and killed the last one, 7 or 8 yards behind. In shooting driven game this is not an uncommon experience for beginners, and is a very useful lesson; for nobody has ever had the opposite experience, and killed the first bird when shooting at the last. But when this shooting at the pigeon and killing the crow occurs, it is not always because of so vast a misdirection as is suggested. Five feet of error at least may be accounted for by the longitudinal spread of the shot, besides something more for the lateral spread. Indeed, two birds in the same covey, one 8 feet behind the other, have been killed at one shot; but it rarely happens. Nevertheless, when one of the two is much the further away, as well as behind, then a bird a very much greater distance than 8 feet behind the one shot at and killed, may also fly into the shot, and die too. In practice, however, it is very much easier to miss a whole pack of grouse that look to be near enough together to kill a dozen at a shot. If one tries to do a bit of "browning," it is generally not the birds that are "done brown." If it is not the survival of the fittest that has evolved grouse that look so much nearer together than they are, it must be a wise provision of nature in the interests of sportsmanship.

From what has been said, it will be gathered that when game is crossing fast, wounding is caused by bad timing. The game is either through the shot column before much of it has reached his line of flight, or he has not reached the shot column when the majority of it has passed his line of flight. In either case he gets but a small proportion of the shot pellets

correct timing would have given to him. Wounding zones and killing circles as applied to straight-away game have little to do with it. Provided timing is right, superficial "wounding zones" help the kill, because the game that passes through them also passes through the bulk of the shot column before or after. Even patchy patterns on the whitewashed plate may be quite evenly distributed to the game flying through the section of the column of pellets. One thing that is perhaps worth noting is that if the head of the column of pellets, or first arrivals of the pattern, surround crossing game evenly, the bird will have so short a distance to go that he may be out of the circumference of the shot column before a quarter of the pellets have come up to his line of flight, and if he loses a tail feather and drops a leg it will not be because of a large wounding zone of shot in the superficial target sense; indeed, a larger wounding zone of that kind might help in such a case: the fault will be because the game had not to fly through the whole section of the column of shot.

Actions of Guns

The actions of guns were at one time so important that gun-makers were selected by reason of the merit of their patents. The tendency of the early actions to part from the barrels at the false breech was so great, that actions became of the first importance. Patents are now run out, and consequently every gun-maker can select the best and make it, and may be trusted to do so provided the weapon is to be paid for at a figure that pays for best work and best material. If this is not the case, still the gun-maker will put in the best action that can be made for the money to be charged; in other words, he will put in the cheapest good design of action, but not necessarily good workmanship. When dovetails are used to join up the barrels and the false breech, it is not because the design of action is not good enough to do without them, but simply that the workmanship or fitting is not good enough. Often the third grip does not fit, and is only for show.

Ejectors

What has been said of actions applies also to ejectors. If all the patents have not run out, plenty of good ones have done so, and the gun-maker has a great choice and nothing to pay for it.

The principle of the ejector is that with split extractors there is a connection between the fall of the tumbler or hammer and an ejecting mechanism, or lock in the fore end of the gun. The opening or closing of the gun after firing is made to cock the tumblers, strikers, or hammers, and also to put the ejector at full cock, or otherwise bring it ready for action, then when a shot is fired the fallen hammer or tumbler, or its re-cocking, is made to react on the ejector at that stage of the opening gun when the extractors have already moved the empty cartridge-case. The undischarged cartridges are therefore extracted, but not ejected, and the used cases are ejected.

Safety of Guns

The safety bolt placed upon hammerless shot guns is very necessary. It ought, when placed at safety, to prevent the lock springs working, and should prevent the possibility of the scear being released from the catch, or bent, or scear catch. Mr. Robertson, proprietor of Messrs. Boss & Co., has shown conclusively that a slight rap on the lock plates will disconnect any scear catch, and so let off the gun when not at safety, unless it is also protected with an interceptor, which is moved out of the way of the falling tumbler, or striker, only by the pull of the trigger. Mr. Robertson's own single-trigger action is also a safety action, even when very light trigger pulls, such as 1 lb., are employed.

The strength of barrels is assured by the proof of them at the London, Birmingham, and foreign proof houses, with loads and charges larger than for service. Anyone in doubt about purchasing guns and rifles would be well advised to write to the Proof Master for the literary matter issued for the pro-

tection of the public and guidance of the trade. This changes from time to time, but at present it gives very full information of the meaning of the various foreign proof marks as well as of our own.

Cross-Eyed Stocks

It is often suggested that a thumb-stall which stands up and blocks the fore sight from the left eye is an assistance to right-shouldered shooters, and sometimes it is. But as it has no effect on the manner of bringing up the weapon, it must require revision to get the correct aim if the weapon is not brought up correctly. The author thinks that a long course of shutting the left eye will *force* the right eye into becoming governing eye by habit. Some people have neither eye greatly the governor, so that each has an influence on the manner of the "present," and helps to fix the point the gun is brought up to. This point may be half-way between the extended lines from the two eyes to the foresight, and permits of no real alignment until the gun is moved after presentation, which is always slow. For such men nothing but shutting one eye will be of much use, but for those who have a controlling left eye it is different, and a cross-eyed stock, or shooting from the left shoulder, is to be recommended. Those who have a control eye need not necessarily be able to see the game with it. Provided they see the latter with one eye and take alignment of the breech and fore sight with the control eye, that is enough. If the eyes are pairs—that is, not crossed—and produce on the brain but one image of an object focused, then the direction of the alignment over or upon the game or target is accomplished in the brain, and the hands obey. That is to say, the left eye may be unable to see the sights, and the right eye may be unable to see the game, but as the images on both are superimposed on the brain the aim is quite correct for normal eyes. A beginner thinks this impossible, but if he uses a thumb-stall, and blocks the fore sight from the left eye, and puts a card over the muzzle, so as to block the right eye from seeing the target, and then focuses the latter, and not the fore sight, he

will soon become unconscious that he is blocking out anything from either eye.

As the ability of the eyes has had to be referred to here, it may be well to remark that any normal eyes can see the shot in flight against the sky, and this ability has been used to advantage in coaching shooters. To see this phenomenon, stand slightly behind the shooter, and look for a little darkening of the sky in the direction of the aim ; it will be easily seen about the time the shot has spread to a foot, or so, diameter. Whether anyone can see the shot much nearer than 15 yards or farther away than 20 yards is questionable; the spread of the pellets reduces the dark shade-like appearance, and it vanishes. Consequently, experts who see clay birds apparently in the middle of the pellets may be quite correct at short distances, and appearances may be absolutely wrong for game or clay targets at distances farther away than the shot can be detected. The bird may have flown another two yards by the time the shot intersects its line of flight. Consequently, this ability of the coach to see the shot should only be relied upon at about 20 yards range.

SINGLE-TRIGGER DOUBLE GUNS

THE idea of a single trigger to double guns cannot be said to have occurred to anyone as an original conception, since it was natural that at the first attempt to build those toys (as Colonel Thornton considered double guns, when he was upon his celebrated Highland tour), the inventor must have exercised some ingenuity to supply these first double guns with two triggers. It was as natural to attempt to make double barrels with one trigger as for a duck to swim. First, because single barrels were the fashion, and second, because single-trigger double pistols were made and were successful. It was, however, at once discovered that the action of the double pistol would not do; it let off both the shoulder gun's barrels apparently as one. For a century afterwards repeated attempts were made to overcome this double discharge, and many patents were taken out on the strength of the inventor having discovered "the real, true cause" of the involuntary discharge of the second barrel, by the pull off that was intended to actuate only the first. However, the problem remained commercially unsolved until Mr. Robertson, of Boss & Co., of St. James's Street, overcame the difficulty, and took out a patent, about 1894, for an action that prevented the unintentional double discharge. The great success of this action led to some hundred patents being taken out between that year and 1902. But most of them were afterwards dropped, and found not to effect the prevention of the double discharge for which they were designed. As a matter of fact, the reason of the involuntary discharge of the second barrel was not understood, not even by Mr. Robertson, who had, by trial and error, arrived at a perfect system of

overcoming the difficulty, without being aware of what really occurred.

In the autumn of 1902 the author contributed some letters to *The County Gentleman*, which explained the difficulty; but his discovery, for such it has proved to be, was hotly disputed in a correspondence led by some of the leaders of the gun trade. This was by no means wonderful, although it is disconcerting for a discoverer to be treated as "past hope" when he is so unfortunate as to make a find that can do him no good, but ever since must have saved much in work and patent fees to the gun trade.

The accepted view of involuntary pull prior to this discovery was that after the shot from the first barrel, recoil jumped the gun away from the finger, and then the shoulder rebounded the gun forward on to the stiff finger, which, being struck by the trigger, let off the second barrel. The author for some time previous to 1902 had become conscious that this explanation was open to question. However, it was not until he sat down and worked out the times of recoil and finger movement, that he felt safe in challenging so generally accepted a statement. But this calculation proved to him that, so far from rebound causing the unwished-for "let off," the latter occurred in one-twentieth of the time occupied by the recoil backwards. However, the author's powers of persuasion failed to convince everybody, and for this reason the editor of *The County Gentleman*, with the assistance of Mr. Robertson, of Boss & Co., and of the late Mr. Griffith, of the Schultze Powder Company, formed a committee of experts to test the point by chronographic examination. Results were published in *The County Gentleman* on December 6, 1902, and were to the effect that the second discharge came in one-fiftieth of a second after the first discharge, but that the recoil backwards, before rebound could occur, took from four different shooters respectively .32, .29, .34, and .38 of a second, or, roughly, an average of one-third of a second. So that it was demonstrated that the rebound from the shoulder had nothing whatever to do with the involuntary

pull. The true and now always accepted cause was as the author had stated it to be—namely, that the recoil jumped the trigger away from the finger in spite of the muscular contraction that still continued after the let off of the first barrel; that this muscular contraction continued to act and again caught up the trigger, as soon as the pace of recoil was diminished by the added weight of the shoulder, and so the finger inflicted a heavier blow or pull on the trigger than in the first pull off. In the first pull it was finger pressure, in the next it was pressure acting over distance, and was measurable in foot-pounds, as work or energy is measured. This proved to be the correct solution.

Consequently, a good single trigger is one that prevents this finger blow from discharging the second barrel. It is impossible to prevent the blow itself, but quite easy to prevent it letting off the second lock. There are at least three principles employed for doing this.

The first is called the three-pull system; it is based on the necessity of either the voluntary second pull, or involuntary blow (as the gun may be loaded or unloaded), for intercepting the trigger connection which the subsequent release of the trigger allows a spring to place in readiness to receive the third trigger pull, and act on the second tumbler; this pull in the unloaded gun is observed to be a third pull, and in the loaded one is only observable as a second pull, because the second has been given involuntarily, and not consciously.

The double-pull actions are different in principle. Most of them are based upon a lengthening of the time between the first let off and the connections with the second lock coming into position for contact with the trigger. In other words, they are time movements, based upon the knowledge that the second pull, or impact of trigger and finger, came very quickly, and that to delay the intermediate connecting link between trigger and second lock until after this unconscious impact rendered it inoperative.

A third system is somewhat different, but is also a timer action. It is based upon having a loose or nearly loose piece,

which is partly independent of the gun, and either by its lesser motion or want of movement, during the jump back of the recoiling gun, gets in the way of a further trigger movement, until the recoil of the gun is over, and the weak spring can replace the independent piece in its normal position again.

It has been said that the greatest advantage of a single trigger is the facility with which it can be removed and double triggers substituted. But this is merely what those gun-makers have said, who, being obliged to have a single-trigger action of their own for those who ask for them, have been too proud to pay a royalty for a good one, and have not felt quite safe in recommending their own to good customers.

The real advantages of a single trigger are many. First, one does not have to shift the grip of the gun for the second barrel. As explained above, recoil occupies one-third of a second, and one does not want to add to the jump of the gun during recoil by partly letting go, nor to be unready at the end of it, by still having to move the right-hand grip in changing triggers. In practice, the single trigger is also much the quicker. It is not necessary to say anything about cut fingers and their avoidance by the use of single triggers. But a wonderful advantage is in the more correct length of stock. If one's gun-maker gave one a stock an inch too long, or short, in double triggers, he would be thought not to know his business. There is only one best length for everybody, but every double trigger has two lengths of stock, one an inch longer than the other.

The author is told that there are still some very bad single-trigger actions being made, but that is quite unnecessary when the best can be employed by paying a royalty, as some of the best gun-makers are in the habit of doing, or were, until the recent action Robertson *v.* Purdey was settled.

Probably it would be more correct to say that the principal advantage of a bad single trigger is that it can readily be exchanged for a good one. The author would not on his own authority speak of bad single triggers, because he has tried most of them, and had difficulty with none.

AMMUNITION

THE time has not yet arrived for us to have a smokeless powder as regular in its action and as little affected by heat as black powder was, neither have we as free an igniting powder, which is of less moment.

Nitro powders have greatly improved of recent years, and would doubtless have continued the progress, but they have been brought up, and to a standstill, in the last two or three years by a sort of trade agreement, or an invention of "standard" loading, which may be supposed to have had its origin in the wholesale cartridge trade, since it is impossible that it can be good for sportsmen, or for those who try to fit shooters with their personal requirements, or, in other words, try to load a sportsman's gun according to the individual requirements of gun and man.

We are still in the dark ages of "pressure" testing, or trying the strength of powders by the work they do upon plugs inserted through the walls of testing guns, and, outside, in contact with lead or other metal that the explosion, in moving the plugs, crushes. In doing this the powder-gas does "work" which would be correctly measurable in foot-tons, but is supposed to be measured in static pounds, which is similar to dropping a weight upon a scale balance and mistaking the weight for the work done by the drop. For instance, if we drop a pound weight a foot on to a scale balance, the work it does is equal to one foot-pound. But if we place it on the scale gently, it will just balance one pound on the other side. One is weight and the other is energy, which are not comparative terms. Yet in testing powders the fashion is to take

the measure of some unknown proportion of the energy and to call it static pounds.

On the other hand, the fashion is to make the exactly contrary mistake in testing guns for shooting strength. The flattening of the shot pellets on a steel plate is the result of energy; here the flattening of lead by which "pressures" are erroneously taken is ignored and scouted, and velocity is considered the thing to judge by, although it is only the velocity of one pellet out of three hundred which, at 20 yards, vary by as much as 300 foot-seconds mean velocity.

In a lecture delivered by the late Mr. Griffith, of Schultze Company fame, it was said quite truly, and with proper pride, that the velocity of shot had increased during the last twenty years by 100 feet per second at 40 yards. During this time recoil has been reduced very much, only apparently in defiance of the law that action and reaction are equal and opposite.

Recoil is equal to the total momentum of shot, wads, and powder-gas, and what the powder people have done is to reduce that portion of recoil that was not represented by momentum of the shot, but was represented by the momentum of waste powder-gas.

Consequently, what has been got rid of in twenty years is some momentum of powder-gas, which has served two purposes —first, by permitting some extra strength of powder, to put some extra momentum into the shot pellets, and to somewhat reduce recoil in spite of this. That then was the tendency of the powder-makers, when suddenly they were brought to a standstill by a catchword, "standard" loading and "standard velocity."

There would have been some sense in "standard velocities," had it been impossible to increase velocities without also increasing recoil; but nobody believes that. The tendency has not only been the other way, but it represents the one and only great improvement in powders that has been made since nitro propellers were first invented. There is still a large proportion of recoil due to the "blast" after the shot has gone, or the momentum of lost powder-gas. It is not nearly abolished,

and is only reduced. Consequently, it was no time to say, "Now we have arrived at perfection, and beyond this point it is a fault to go, and consequently we fix as a standard 1050 foot-seconds mean velocity at 20 yards as the correct velocity, above and below which nobody must attempt to carry ballistics of shot guns." That may suit wholesale manufacturers, because it is a standard easy to accomplish in bulk, but here is what it means as a check to progress.

First, if we take a peep at Mr. Griffith's own celebrated revolving target trials of just twenty years ago, we find that his mean velocities of those trials were *all* more than 1050 foot-seconds at 20 yards range. They were for the three guns and loads used 1073, 1124, and 1062 foot-seconds. But he has quite truly told us that during these twenty years the velocity has increased 100 feet per second. Consequently, the "standard loading" sets back the clock more than 100 foot-seconds and more than twenty years. That is not all: those beautiful trials exhibited the fact that the last pellets in a load had from 221 to 300 foot-seconds less mean velocity than the first, so that "standard" loading may mean 1050 foot-seconds for the first pellets, and 750 foot-seconds for the last, at 20 yards range. These trials were all conducted with cartridges loaded with $1\frac{1}{8}$ oz. of shot. But years before that, when fine grain black powder was used, and gave to $1\frac{1}{8}$ oz. of shot much higher velocities than those named above, Sir Fred. Milbank shot his 728 grouse in the day with $\frac{7}{8}$ oz., on the ground that the ordinary $1\frac{1}{8}$ oz. gave too little penetration—that is, too little velocity.

The only possible arguments left to put forward against increase of velocity are two:—

1st, that greater pressure adds to the necessity of weight of gun.

2nd, that more velocity spoils patterns.

The reply to the first is that the improvement of powders and increased velocity has been attained, as stated, by other means, and without increasing pressures; and, second, if pressures were increased it would not matter to the shooter

who uses best metal in his guns, because it is quite easy to build 12 bore shot guns under 5 lb. that are quite as safe as 7 lb. guns; and weight is consequently adjusted by reason of the incidence of recoil, and not by reason of the weakness of steel.

The second proposition is equally groundless, and it is answered by the fact that not one in a hundred men use the fullest choke boring, and if velocity opens out patterns too much, ten shillings spent on a little more choking, by recess at the muzzle, will bring back the pattern in spite of the tendency of the greater velocity to open it out.

The means adopted by the powder-makers to effect the improvements referred to above have been to lighten the charge of powder, or to compress more fixed gas into a smaller solid weight. This statement more particularly applies to the light (33 grains) bulk powders. By "bulk" is meant those powders that fill the space occupied of old by 42 grain nitro powders in the 3 drams measurer meant for black powder.

But this does by no means embrace all the possible improvements. The 26 grains, and concentrated, powders occupy only about half the space of the bulk powder of whatever specific gravity, and consequently the prospect opens before them of making use of their 80 times power of expansion in the barrel, instead of the 40 expansion power of the bulk powders. This is not as great a possible improvement as it sounds, but it is a large one all the same. At present the coned cases used for this class of nitro powder bring it down below its possibilities, because, as these cones stretch under powder-gas pressure, it is similar in effect to the powder occupying more space in the chamber, and negatives a great part of its capacity for double expansions of other powders within the barrel. At present the makers of condensed powders have not been strong enough to get gun chambers generally shortened to suit them, and thus they are condemned to compete handicapped; but if we were starting to design guns afresh, and were not bound by precedent and the necessity of sometimes borrowing cartridges and lending them, gun chambers and cartridges would be shortened to make

use of the possible 80, instead of 40, expansions, with an accompanying still further reduction of lost powder-gas momentum, or loss by "blast," and its automatic accompaniment of more reduction of recoil.

Of course short cartridges in long chambers are not to be thought of from the standpoint of improvement, and in many guns they ball the shot in a most dangerous way. Thicker wadding is more objectionable than coned cases, unless it could be made lighter than the greased felt wad is now, and not only lighter but less compressible, because to compress it is to hinder it from bridging the cone between the mouth of the cartridge and the barrel proper, and it also enlarges the powder chamber in practice.

Some few years ago the cartridge-makers and the gun-makers came to an agreement, that there should be a maximum size for cartridges for each gauge and a minimum size for gun chambers. This was very wise and proper. These sizes are well known to all gun-makers, to whom they are important, but they have no interest for shooters, because the latter have not the instruments to measure either chambers or cartridges, and the usual and very proper practice is to make the seller responsible, and return cartridges that are too big to go in the chambers, or too small, so that they shoot weak, or burst the cases, or both.

Herein lies a great advantage of taking your gun-maker into confidence about cartridges. We cannot, as a rule, give bigger or smaller cases to fit chambers that may have been made, or grown, bigger before or since the agreement was come to; but if chambers are rather large for cartridges, and consequently shooting is somewhat weak, he can suggest a grain or two of additional powder to the usual charge. It is the belief of the author that a gun-maker usually delights in turning his customers out to do the best possible work, and will take any trouble to that end, not only because it is business, but because it gives personal pleasure.

Shot sizes are mentioned under the headings of the game to which they are most fitted; but although a slight advantage

can be had by using hard shot, it is so slight as to be scarcely worth attention from the marksman's point of view, and those who love not the dentist should at least refrain from breaking their own teeth unnecessarily.

Until something better is invented for the purpose of trying guns and cartridges, strawboard racks and Pettitt pads are the only means open to the shooter, and besides, when properly used, are the best means. Both vary in thickness and hardness, the latter according to the weather. But every shooter can arrange for a trial against a gun he knows, and against hand-filled black powder cartridges. Then, if he uses his "trial horse" against the same pads and boards as the other gun, or new cartridges, he will arrive at correct comparative results. This is not only the most effective but the cheapest way. If strawboards are used, the first and last boards can be renewed for each shot. The chances of having a shot pass through an already made shot hole are too remote and unimportant to matter. Then the way to assess penetration is to count the shot that struck the first board or sheet of paper, and the number that pierced the last, arranging the last in such a position that about one-half those pellets that hit the first paper also go through the last. This takes the mean penetration of the load, and was Colonel Hawker's method. The results will then read something like this: .41, .50, .60, .55 of total shot through, say, 20 sheets of brown paper Pettitt pad.

The true way of testing the energy of the shot is by means of the ballistic pendulum, but although the author has designed a more simple apparatus than the usual device of this sort, it is not yet sufficiently tried to warrant its description.

To the very few who load their own cartridge-cases the author can offer no advice beyond this: the best cases and wadding, and the best powder, meaning the highest priced, are necessary, and not merely luxuries. The amateur loader has no means of testing powders to see if they fluctuate, and he must rely, therefore, on the maker; and that very careful person will take the most trouble over that for which he charges most. The shooter, in fact, is not buying raw material, but personal

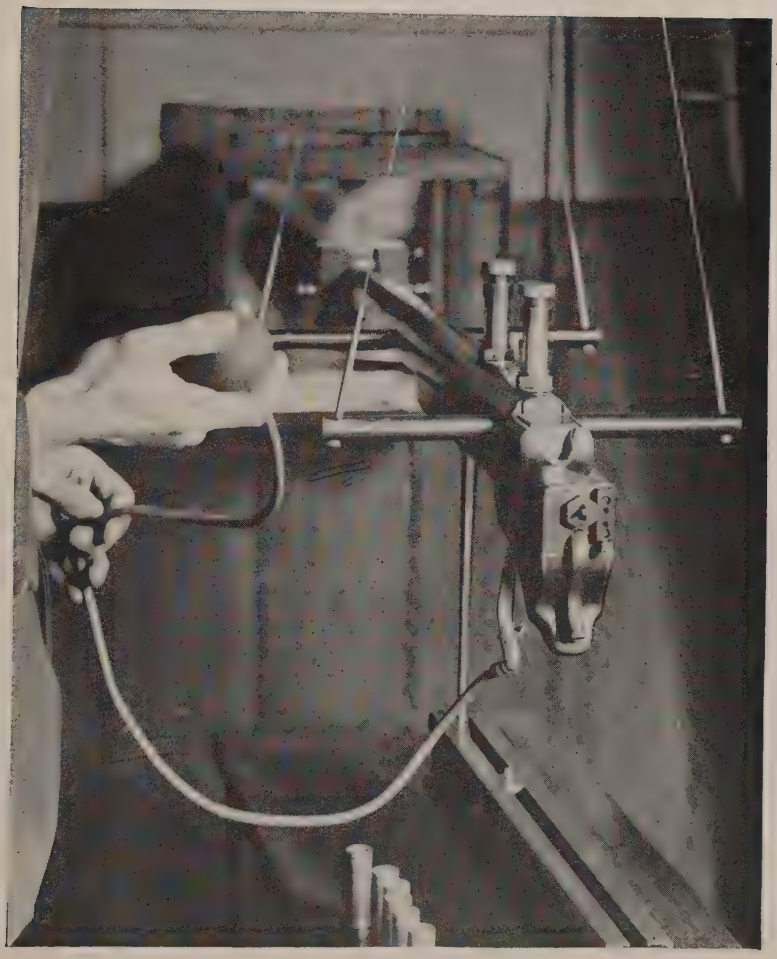
care and trouble. There is a possibility of a professional loader varying his method to suit fluctuations in strength and rapidity of powder. He can do it by means of the turnover, or by adding to or reducing the charge; but this is outside the range of the amateur's skill. He would not know what was wanted. Even the best nitro powders do vary, batch for batch, and also by reason of the heat of the weather as well as by that of their storehouse.

The best place to keep cartridges in during the winter is the gun-room with a fire, and in the summer in the gun-room also, if it is dry enough not to require a fire; but the principal safeguard is to keep cartridges and their bags and magazines out of the sun as much as possible. The sun will easily raise the so-called "pressure" by about a ton per square inch in some cartridges. How much this may really be it is difficult to even suggest, but Lieutenant Hardcastle has estimated that "pressures" are not reliable within 30 per cent., and the author would have said by more. Fifty per cent. added is a very different proportion to 50 per cent. of reduction. In one case it is as 2 to 3, and in the other case it is as 2 to 1.

Cartridge Loading Machines

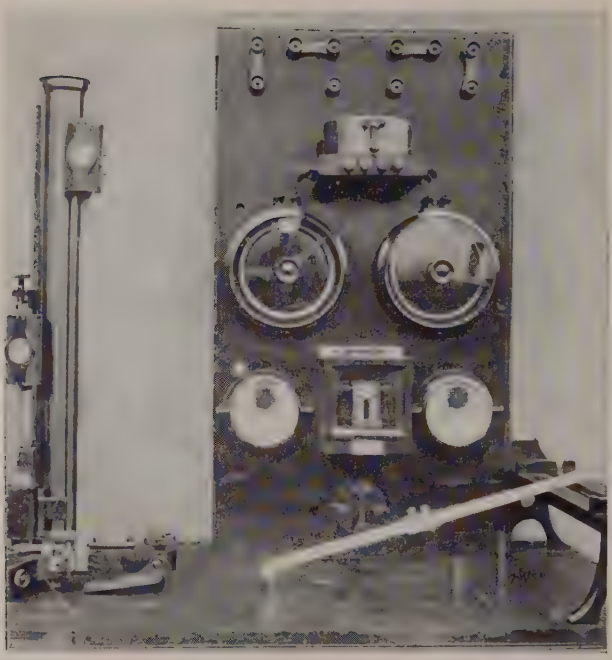
In the development of the manufacture of cartridges for small arms, it is natural that the original method of inserting the powder, wads, and shot or bullet by hand should be superseded by machines for the performance of these operations. It can be readily understood also that the present state of efficiency and accuracy of the modern cartridge loading machine has been arrived at only by degrees. The first step from hand-loading was a measuring tool to measure the required charge of powder from a hopper which formed part of the tool, and which could be easily moved from one cartridge case to another, measuring and dropping the powder charges into the cases one by one.

Subsequent operations were still done by hand. An improvement on this method was that known as plate-loading,

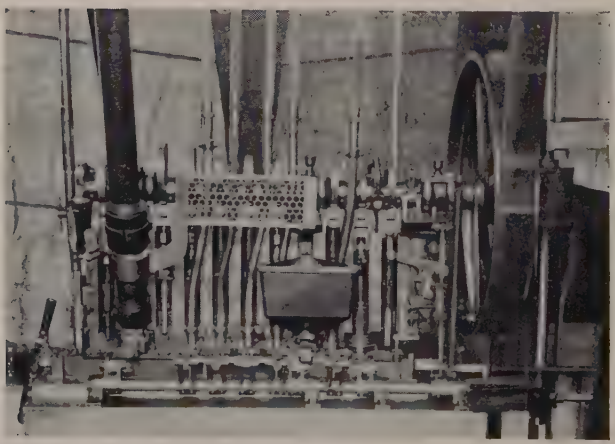


MAKING SPORTING CARTRIDGES

A special gun for testing the cartridges. The power of the charge and recoil are recorded



THE CHRONOGRAPH



AN AUTOMATIC CARTRIDGE LOADING MACHINE

in which a metal or wooden plate was used, containing holes which were made to hold the amount of powder required. This plate was placed over a tray containing the cartridge cases, and positioned so that the holes corresponded with the cases. A slide in the bottom of the plate was then withdrawn, and the powder allowed to fall from the plate into the cases. This system permitted the loading of several cases (generally 100) at one operation. A semi-mechanical development of this arrangement was introduced by which a row of cases in the case tray was charged by a turn of a handle, which also mechanically moved the tray forward another row after the first row was charged.

Then came the purely mechanical loading machine, which combined all the operations of loading, from powder charging to crimping, in one machine. Since every cartridge factory has been developing its own methods of mechanical processes, it is inevitable that there should be several types of these machines in existence. The principle is the same in all, the types varying only in minor details of adjustment, etc. They are divided into two distinct forms, however—the rotary and the straight. In the former the cartridge cases are fed into a revolving circular table, which brings them in turn under the various tools necessary for the loading operations. In the latter the cases are fed into a travelling belt, which carries the cases in a straight line under similar tools. In the loading of the ordinary shot-gun cartridge, the empty case comes first under the powder-measuring tool, which measures the charge and drops it into the case. Various ingenious methods are in use in the several machines to ensure the accuracy of this charge. The case is then carried forward or round, as the case may be, to the tool which inserts and seats the card wad on the powder. The felt wad and card over felt are similarly inserted and seated by the next two tools, the case being brought under them in the course of its journey through the machine. It then comes to the shot-measuring tool, which measures the shot charge and drops it into the case in the same way as the powder charge. Here again various methods are in use to

ensure the accuracy of the shot charge. Another tool places the over-shot card in position, and the case travels on to the crimping tool which turns over the paper end of the case. The fully loaded and finished cartridge is then ejected from the machine. The felt wad and all the card wads are first fed into long tubes, in some machines mechanically, in others the tubes are filled by hand, so that there is a column of wads in the tubes. These tubes are placed in a position on the machine, not exactly over the case. As the case reaches a point where a wad is to be inserted, a finger pushes forward the bottom wad in the tube into a position immediately over the case. A vertical plunger then seats the wad. The wads fall down the tubes by gravity, hence, as soon as the bottom wad has been moved forward, the next one takes its place ready for the next cartridge, and so on.

In all the best patterns of loading machines, mechanical trips are in operation, which automatically stop the machine. These trips operate when any of the processes are at fault. For example, if the powder-measuring tool did not throw the correct charge for any reason, or failed to throw a charge at all, by reason of the hopper being empty, etc., the trip would immediately operate and stop the machine automatically. Similar trips are arranged at all the other operations. It is, therefore, practically impossible for the machine to turn out a faultily loaded cartridge. It is this mechanical elimination of errors which make the machine-loaded cartridge a much more reliable article than a cartridge loaded by hand, with all the possibilities of human error attached thereto.

THE THEORY OF SHOOTING

MANY scientific calculations have been made with a view to improving the shooting of sportsmen, or at least of interesting them. Two, which are in theory unassailable, have appeared very often indeed in the unanswerable form of figures and measurements, and nevertheless they are both misleading, and even wrong, in the crude form in which they have been left. One of these is based on the calculation that the shot and the game can only meet provided a certain fixed allowance in front of moving game is given. The calculations are quite correct, but they have no application to sport, for the simple reason that they neglect to calculate the reduction of the theoretical allowance in front, supposed to be necessary, but not all imperative because of the swing of the gun. In other words, the gunner, however expert he may be, does not know exactly where his gun points at the instant the tumbler falls, let alone the instant the shot leaves the barrel. Between the instant of pulling the trigger and the shot leaving the barrel a swinging gun will have moved some unknown distance, and this represents additional unobserved allowance. An inch of this movement at the muzzle of the gun becomes an allowance of 40 inches in as many yards of range. It will be necessary to refer to this unconscious allowance again directly, because it has a bearing upon the second oft-stated proposition.

It is this: mental perceptions in various individuals range from quick to slow, and besides this the muscular action due to mental orders and nerve impulses also range from slow to quick. Both these well-known facts are constantly asserted to

necessitate an *added allowance* in front of game by the slow individual. In practice, however, these slow individuals never admit the yards of allowance that they are supposed to need to allow in front of fast crossing game. It has occurred to the author to question whether the man of slow perception and of slow muscular obedience does need to allow more than the quick individual. Probably it is exactly the reverse; and he has to see less space between the muzzle and the game than the quicker man and than he of what is mistakenly called less personal error.

The "personal error" seems to be in assuming that the slow individual does not subconsciously know his own speed, and compensate for it.

Apparently it is mistaken to place the actions of shooting in this or any other sequence of events. It is said, "You see the game, you aim, your eyes tell the brain your aim is true, your brain orders the muscles to let off the gun." That is possibly correct for some people, but the author does not believe that any fast crossing game would ever be killed if it were so. His view is that there is the game; your brain now instructs two sets of muscles to move in different directions, one to move the gun and another to pull the trigger, and at the same time informs each how rapidly to act in order that left-hand gun-swing and right index-finger pressure may arrive precisely together. This is what is called hand and eye working together, but it should be hand and finger. The eye certainly may observe whether the two things have been done at the same instant of time, but when they have not there is no time for correction; all the eye can do is to inform the brain that the swing did not catch up before the gun was off, or the reverse, so that the brain may correct the missed timing for the next shot. It is necessary to observe that the finger pressure starts, as does the swing of the gun, before aim is completed, and that if the latter were got before the order to pull were given by the brain, it would be lost by the mere continued swing of the gun before the order could be executed.

What has to be considered, then, is what appears to the

brain at the instant of discharge. The quicker the perception of things as they happen, the more space will be observed between the muzzle and the crossing bird as the gun races past the game. The slow perception will not observe that the gun has passed the bird when the explosion occurs, and this clearly accounts for some good shots declaring they never make *any* allowance for crossing game, but shoot "pretty much at 'em." Of course they do nothing of the sort; but they tell you what they perceive. They do not observe that in the interval between pulling trigger and the shot leaving the barrel the gun has travelled past the game very considerably, and what they have observed is the relative position of gun and game at the time the trigger gave way. For their class of shooting, therefore, they must look for less daylight between gun and game than the person of quick perception, who sees most of what there is to observe.

The velocity of light is so much greater than the velocity of recoil, that it may be questioned, on that ground, whether this is the right explanation, on the assumption that only recoil would stop the perception of the relative positions of game and gun. But were it so, it is necessary to remember that the velocity of light has no relationship to the velocity of brain perception through the eyes.

But probably recoil has nothing to do with the matter for the man of slow perception, and to him the discharge is done with as soon as the trigger gives way. It appears, then, that the slower brain perception is through the eyes, the less observed allowance a swinging gun will require.

Is it possible to shoot fast crossing game without a swinging gun? For an answer to this, the author has tried to come back from the first shot to meet flying game behind with the second barrel, but has found it impossible to kill. Here the swing is in the opposite direction to the movement of the game, and it invariably carries the shot behind the game. Assuming it to be possible (as it is) to throw up the gun to a point of aim at which game and shot will intercept each other, the gun is mostly, possibly always, given a swing in the direction of the game's

movement by the mere act of presenting. That is to say, the shooter is raising his gun from a position more or less in the direction of the game when he starts the movement, and as the game is not there when the explosion occurs it is obvious that the gun has done some swinging, possibly unknown to the shooter.

Much reliance upon this kind of racing with the game has its disadvantages as well as its advantages. It reduces the necessity for accurate judgment of speed of game to a minimum. That is to say, if the gun races the game, and gets ahead of it unobserved by the shooter, the pace of the gun is set by the pace of the game, and the unobserved allowance ahead is also, and consequently, automatically adjusted by the game itself—that is, by its angle and its speed.

But this method of shooting takes no account of the *height* of the game, and possibly this is one reason why high pheasants are so very difficult to many excellent marksmen at lower birds.

The pace of game high and low being the same, it is, relatively to the movement of the gun, slower according as distance increases. If the gun muzzle has to move 5 feet a second to get ahead of game crossing at 20 yards away, it need move but 2½ feet per second to get ahead of game 40 yards away and moving at the same velocity. Consequently, when the whole allowance is given unconsciously by swing, and is just enough at 20 yards, it is clear that the same swing will only give the same unconscious allowance at 40 yards, and that this will not be half enough at that range, where the pellets are travelling slower and have double the distance to go.

For this reason, in theory—and the author's experience supports theory in this case—it is better to make an allowance in front of all game, *in addition to swing*, and to increase the allowance very much for long ranges. To reduce theory to practice: with a swing to the gun automatically set by the speed of the bird, the author would find it necessary to allow 3 yards ahead of game at 40 yards, whereas the same game at the same speed would not have more than 2 feet allowance at

20 yards. But as all game varies in speed, and as all shooters see what they do differently, this has *no* educational value for anyone, except so far as it sets out a principle that has not hitherto been dealt with, except in some newspaper articles—namely, the principle that swing regulated automatically by the pace of the bird has more effect at short range than at long range. This is so whether the nature of the swing is merely to follow and catch the game, or to race it and get past it, or to race past it to a selected point or distance in front.

To attempt to bring home this truth to those who do not agree with these remarks, it may be expedient to point out that they explain a very common experience. One sometimes gives ample apparent allowance in front of a crossing bird, and shoots well behind him; then, with the second barrel, one races to catch him before he disappears over a hedge, fires apparently a foot or a yard before the game is caught up, and nevertheless kills dead.

The judgment of speed is not very important if one allows the speed of the game to regulate the rate of the swinging gun, and although it is frequently discussed as if no one could shoot well without a perfect knowledge of speed, it seems doubtful whether it is necessary to worry about it, when the act of getting on the game is really an automatic regulation of swinging to the movement of the bird.

But as there are very likely some shooters who would like to be able to calculate speed as accurately as may be, here is a plan which is never very much out for heavy short-winged game, such as pheasants, partridges, grouse, black game, and wild duck of kinds.

Estimate the height of the game at the moment it was shot, then measure, by stepping, the distance the dead (not wounded) bird travels before it touches the flat ground. Air resistance to the fall of the bird will be practically just equal to air resistance to its onward movement after it is dead, and the time it takes to fall, and necessarily also to go forward the measured distance, are the same. The time taken for the fall may be safely calculated by the height in feet divided by 16, and the square

root of the dividend is the number of seconds of the fall. Thus, if the bird falls 64 feet, then $\frac{64}{16}=4$, and the square root of 4 is 2 seconds. In 3 seconds the game falls 48 yards, so that practically all pheasants take between 2 and 3 seconds to fall, or ought to do so.

The velocity the bird is travelling before being shot does not affect the time it takes to reach the ground, but wind, with or against the game, slightly alters the distance it goes forward after being killed. With the wind the game will always be going faster than the air, and will therefore be getting air resistance from the front, and the method only partially breaks down when a heavy wind is blowing directly against the game.

THE PRACTICE OF SHOOTING

THE late Mr. Walter Winans expressed the opinion that the better a shooter grows at the rifle targets the worse he becomes at moving objects with the gun. But it is probable that all good shooting at moving objects is based upon a beginning of steady alignments. Those who believe that shooting at flying game is to be well learnt before still objects can be accomplished seem to the author to neglect the first principles, and would run before they can walk. There is this to be considered: that one often does get, even in grouse and partridge driving, marks that are exactly equivalent to still objects. That is to say, they are coming perfectly straight at the gun. Is one to let them off without shooting quite straight because one has been taught not to align? There is no doubt the best shots do align for the very fastest crossing game if there is time to do it; and the belief of the author is that a man cannot be really quite first-rate unless he can shoot in every style as occasion requires. That is to say, he will be able upon occasion, when circumstances and time admit of but a brief sight of a crossing bird between the branches of fir trees, to throw his gun ahead to a point, as he thinks, and tries to do, without swing, and will be able to kill his game. The author has occasionally risen to such success himself, but only when he has not been trying to do it, but has grown up to it, out of the more certain method of consciously swinging past the bird to a point in space ahead, and pulling trigger as the alignment was getting to the spot, and without checking the gun. In the first-named style of shooting, when the kill comes off, there is probably always swing, by reason of the gun being put up

from a position pointing much behind the bird, so that the swing occurs as the gun is going home to the shoulder, and it is not checked when the trigger is pulled, simply because no swing can be checked instantly. By this method of finding the place and shooting at it, the author can manage rabbits jumping across rides—that is, when he manages to kill them at all; but he prefers to handle winged game by the slower and surer method, which, however, he would abandon for the better style if he could. But the ability to be quick in this better style is not his for a permanency, it only comes sometimes, when there is not time to take game with a conscious swing of the gun. The late Mr. A. Stuart Wortley, who was one of the best game-driving shots of his time, has told us in one of his books that he could not hit anything until he started to shut one eye and align. Later, he thought first aiming at a bird, and then swinging forward of it, was slow, and making two operations of one. Lord Walsingham has assented to a description of shooting in which the "racing" of the bird with the gun was the principal feature, and Lord de Grey has been watched to put his gun up, try to get on, and, failing, take it down without shooting; all of which tends to show that alignment and swing are the two necessary factors in shooting, not necessarily alignment of the game, but generally of a moving point at the end of a space in front of the game. Mr. F. E. R. Fryer is very clear about the advantages of swing, and also allowance in front. As he is as quick a shot as ever was deliberate, and more deadly than those in a hurry, there can be no better proof that swing itself is not necessarily accompanied by any delay. But there are two or more kinds of swing, and it does not necessarily mean what Mr. Stuart Wortley implied. It is not always, or often possibly, a jerk after getting on the game, neither is it a following round of the game, but in its best form it is probably mostly done before the gun touches the shoulder, and is not stopped by contact with the shoulder, or by pulling the trigger. It is not supposed that those who can sometimes bring off this ideal style—which, in intention, is finding the right place in front of the

TAKING THEM COMING OVER

HIS MAJESTY THE KING WHEN PRINCE OF WALES SHOOTING GROUSE AT BOLTON ABBEY, SHOWING THE VERY FORWARD POSITION OF THE LEFT HAND

game to shoot at—always find this style possible to them. At least, not invariably possible for very high and very fast game; and the author believes that the only way to it for a novice is to begin by aligning, go on by aligning, and end by aligning; for that is really what this ideal style of shooting amounts to. It is aligning a spot, which bears no mark, ahead of game, and doing it as the gun comes home to the shoulder, and with a double movement, while it swings in the direction the game is going. That is to say, it is the quickest and most accurate alignment of all. That is the outcome of all the author has been able to learn of the methods of crack shots, confirmed by his own longer but smaller experience with the shot gun.

These remarks have appeared necessary by reason of the large quantity of bad advice that has been given. Those who have said that no alignment was necessary, because it took too much time, seem to have a notion that the gun has to move fast because the game does so. But a muzzle movement at the rate of 3 or 4½ feet a second, or two, to three miles an hour (less than the space of an ordinary walk), will out-race any reasonable bird at 30 yards range, even if he is travelling 90 miles an hour, so that it is not pace, as such, that is difficult.

Calculated allowance in front of game, and the automatic allowance for speed by reason of swinging with the bird, have been touched upon already. The worst objections to giving a little too much allowance ahead are, that only a part of that proportion of the load that should hit the game does reach it, and that part is the weakest of the load, or, at any rate, the last pellets. Another is, that any swerve of the game ensures a complete miss, and it is swerving of fast game that causes its difficulty much more than its pace. This supposed necessity for being so very quick because of the great pace of game has spoilt more shots than anything else. There generally is plenty of time to be deliberate, to aim at the exact spot while moving the gun at least fast enough to keep ahead of the game, and it is necessary to remember that the best shots are the quickest only because they are most deliberate, and get "on the spot"

before firing, or, to be more correct, know that they are about to get there by the time their fingers can take effect on the trigger. Mr. Fryer before mentioned says that he has both to swing and make allowance too for the very fast high birds.

Probably the best way to avoid stopping the gun as one pulls trigger, or waiting to see that aim is correct before letting off, is to make a rule to pull just before the right alignment is reached. It will be reached by the time the shot leave the gun.

There is no reason to say that for handling a pair of guns instinctively a loader must be trained by the shooter himself, because there are so many ways of giving and taking guns. Besides this, shooting far off with the first barrel for grouse, and as soon as partridges top the fence, are essentials to getting in four barrels at a brood, or covey, as the case may be. Moreover, it is generally a case of kill or miss in front of the shooter, and wound or kill behind him.

Shooting schools cannot help a shooter to learn to kill curling pheasants, swerving partridges, wrenching grouse, or zigzagging snipe, but they can teach the quick firing and changing of guns. And to one not in practice it is this quick firing that puts a shooter out of touch with gun and game, much more readily than swerve, wrench, zigzag, or curl.

All the talk of the speed of driven game making it difficult has frightened and unnerved many a beginner at such birds, but it is merely the echo of what was said before shooters had learnt that they had to swing and aim ahead as well. To talk of speed of game now, as if there was some mystery in it, is merely to unnerve more disciples of Diana. When once the gunner knows where he has got to shoot for the driven bird (in the singular), the shot is much easier than the going-away game, because the longer you wait in one case the worse chance you have, and in the other the better chance you have. If the shooter thinks differently, he can turn round in the grouse butt every time, instead of shooting his game coming; but he will soon give that up, because he will find his gun

is not equal to the greater requirements of the going-away game.

After writing the remarks above, it seemed to be the proper course to consult some of those excellent marksmen who are discussed by everybody. Consequently, the author bethought him of the article he had written for *Bailey's Magazine* on the twelve best shots, and decided to ask for the views of a few of those expert marksmen who had, by the votes of others, come out as best. He was impelled to this course not with any desire to have his own views corroborated by such good authority, but in order, if possible, with the greater authority, to correct what to him appear very erroneous notions so often seen in print. As nobody can assist those who are perfect already, it is clear that the novice is the person who can benefit by a discussion of the subject. For this reason it was not so much to inquire how crack shots shoot now, as how they learnt to shoot, that was the intention of these inquiries. Often have been put forward the methods of shooters *after* they have become expert, which is about as helpful as telling a schoolboy, "There is W. G., go and imitate him with your cricket bat." The author's own fault of delay and the limitation of space has rendered it necessary to compress this information into very small space.

After disowning any more connection with the twelve best than a hundred others have an equal right to, Mr. R. H. Rimington Wilson was good enough to reply to some leading questions in much this way:—

In shooting at fast crossing game he looks at the place he is going to shoot, not at the game.

He admits that the "ideal" best form in shooting would be to bring up the gun in the nearest way, without swing, and to shoot to the right place, but he questions whether it can be done for high, or fast, wide birds. He can do it for near grouse, just as the writer has explained that he does it for rabbits. But Mr. Wilson is convinced that for far-off fast game you must "swing." He once questioned Lord de Grey on how he shot, and the reply was that this great performer

took every advantage the game gave time for. That is to say, he only shot quick, by the throwing up and firing without swing, when there was no time for swing.

For pheasants, Mr. Wilson prefers to get behind them and race his gun to the front without stopping the gun to inquire whether he *has* got in front, because he finds that such a stop means shooting behind. But although this is his plan, he questioned whether it was right, because when he has occasionally shot from a deep gorge, where there was no time for this method, he has found the game come down, just as he has when a quick second barrel has been sent after a first failure. The author thinks this only emphasises the use and value of swing; because in shooting at a pheasant crossing a deep gorge the very act of putting up the gun to the shoulder constitutes a swing in the direction the game is going. It is probably the fastest of all swinging, and the one to which the shooter is least able to apply the muscular stop. This, then, represents what some crack shots do now. But the most important thing to know is how did they arrive at that point? Did they begin by snapping at the place where the bird was going to be when their shot arrived, or did they begin by aligning, and so grow into the mastery of the gun?

The former has been the fashionable method to talk of in the press, but Mr. Rimington Wilson is very emphatic on the necessity of the rifle like aligning as a start. The author was very pleased to hear this, because it is one of those points on which he has always disagreed with what may be called the written schooling of the shot gun. We have all heard of the man who never would go in the water until he had learnt to swim, and probably the would-be crack shot who wishes to begin at the end will make no more progress than the would-be swimmer.

Mr. Wilson does not believe in choke bores. He thinks that the 8 or 9 yards of distance they increase the range is paid for very dearly at all near ranges. Another point made by this good sportsman is contrary altogether to accepted ideas.

MR. R. H. RIMINGTON WILSON SHOOTING GROUSE, SHOWING THE BACK POSITION OF THE LEFT HAND

Note.—The position of the left hand shown above is considered by the leading authority as being the most correct

AT WARTER PRIORY. LORD LOVAT IN THE DALES

He does not believe driven grouse harder to kill than grouse shot over dogs, and would rather back himself to kill consecutive numbers of the former than the latter. Here, again, Mr. Wilson is in agreement with the author, who has often given this opinion in the press, and has, moreover, supported it by pointing to the wretched scoring of double rises at the pigeon traps, even at 25 yards and by the best pigeon shots in Europe. Pigeons, again, are much more responsive to lead than a right and left grouse at 35 yards rise in October. The grouse spring twice as quick as the pigeon. But Mr. Wilson was not speaking of the October grouse, but of average grouse shooting over dogs and average driving. Probably we all agree that there is an occasional impossible in almost every kind of shooting.

Another point that Mr. Wilson has assisted the author to place in its true light is that his big bags are by no means made for their own sake, but simply because the grouse are on the moor and his is the only way to get them. To hunt for grouse in driblets would be to drive most of them away never to be shot. They are so wild that they have to be broken up by the severest treatment, and as one man could drive them all away, so it takes an army of flankers and beaters to keep them on the moor during the driving days.

Mr. Wilson shoots with Boss single-trigger guns, and, contrary to expectation and ideas, one of these single triggers is often made to do duty in a day's tramp after a couple of woodcock or a small bag of snipe.

FORM IN GAME SHOOTING—I

"FORM," like "taste," is a very definite thing to every one of us, but probably no two persons have ever quite agreed about either. Shooting "form" is just as definite: we know for ourselves what is, and what is not, good form instantly; but again it is not an easy thing to agree upon in the abstract, although in practice when two men discuss another they will not be unlikely to agree that he is either "good form" or "bad form." There appears to be no half-way house—it is always either good or bad. Form as it is generally understood has not much to do with success, but is more a matter of appearance. If a shooter at a covert side planted his gun at his shoulder when the drive began and so kept it until a pheasant came over into line, and then he let off, his form would not be either good or bad—it would be too uncommon for either; too ridiculous to be seen, in fact; but it is precisely that which pigeon shooters and clay bird men mostly adopt. It is outside the question of game killing altogether.

No kind of shooting requires more sharpness of eye than grouse driving, and when the gun is at the shoulder, engaged with one bird, we all know how easy it is for others to slip by unobserved, and then we get just as bad a reputation as if we had blazed away and missed.

Obviously, quickness of perception has much influence on success, but whether it has anything to do with form is doubtful. It is curious that what we all agree is the best possible style for the second barrel is the worst possible for the first. The man who takes down his gun between the double shot is a fumbler, unless he has to turn round; but the man who keeps his gun at

the shoulder for the first shot is worse. The reason it is bad form in one case and good in another may not be quite the same as why it leads to success in one case and not in the other. Perhaps an appearance of ease has some near relationship to good form, and ease itself has a nearer affinity to success with the gun. It would tire out the arms to practise in game shooting the pigeon shooter's methods, on whose arms the strain in the "present" position lasts only until he calls "pull." The strain in game shooting would last long, and it would certainly happen that when, at last, game did come within range, the arms of the shooter would be too cramped to deal properly with it. "Form," therefore, appears in this instance to have some relationship to success. But this is far from being always so. The author remembers one case of a young man who did not kill much, but of whom it was said it was more pleasant to see him miss than to see others kill. This was in shooting over dogs, when good style greatly depended upon "wind" and "stamina" to get over and shoot from any rough foothold.

There is "form" in walking also, and when stamina counts there can be no good style in shooting without good easy walking. Look at the different angles of body in which men go up and come down hills. In the ascent some people bend their backs over their foremost toes, and progress, truly, but they have to "right" themselves when the flush occurs, and before they have done it the bird has flown 20 yards. Again, in going down hill some men throw back their bodies, and if they have suddenly to stop they again have to "right" themselves before they can shoot with success.

But there is something worse than bad shooting style, there is bad sporting form; and coming down hill often brings it obviously to the man who is walking behind, and sees the leading man's gun carried on the shoulder, pointing dead at the pit of the follower's stomach. That cannot be avoided when the gun is carried on the shoulder in Indian file; but it never ought to be so carried then, and in the writer's opinion, at least, is a deadly disregard of "good form." In this case probably there will be no disagreement by any who from this

cause have ever felt their "hearts in their mouths." Guns can be jarred off, and the rough ground on a moorland down-hill path often occasions very sudden jars.

There are other shooters who always seem to be at the ready, whether they are going up hill or down; whether they are jumping from peat hag to peat hag; or, in the bogs, from one rush clump to another, to save themselves from sinking in the intervening soft ground. Balance has a great deal to do with it, and some there are who can shoot straight even when the foothold is rotten and is giving way under them. It is clear that good form requires that the performer should be able to shoot from any position the rise happens to find him in. If he must get the left foot forward and the weight of the body upon it, he will not be as quick as others who can get off their guns no matter where their feet may happen to be.

This seems to be all a matter of balance, and the nearer we imitate cat-like equilibrium, and not only keep our heads uppermost, but keep them cool in all circumstances, the more surely shall we get our guns off at the right moment.

The latest phase of shooting is to make it as easy as possible to accomplish the difficult. Paradoxically, we have our boarded floor in our grouse butts, racks to keep the guns off the peat, and shelves upon which to distribute our cartridges, and we place our grouse butts to favour the guns. Then, having made everything as easy as possible for the sportsman, we now attempt to make the birds as hard to kill as wings and the wind can make them. We send over the pheasants as far out of reach as we can make them fly; we take particular care to send the grouse down wind if we can; and when we have got our guns swinging yards in front of the streaks of brown lightning, then we are especially pleased if we can bring off an up-wind drive in which the birds can just, and only just, beat up against the gale, and so defeat the guns again by the new variation of flight; one in which any sort of lead on the birds, any kind of swing, will have no other effect than shooting yards in front of the game, and perhaps in turning it back to fly over the drivers' heads and miles down wind beyond.

Some of the most killing shooters are those who need ample time; those who get on their game 100 yards away, come with it as it approaches, then jerk forward and pull trigger at the instant, and never require to look round to see if their bird is dead—they know it is. The critic may think this terrible slow business; and so it is. What, he will ask, would happen if four came abreast and the gunner wants all that time for one bird? The critic's opinion would be just if he watched and saw that the slow and sure performer did not, in fact, have time to deal with, let us say, two pheasants abreast without turning round. But to assume that a shooter cannot be quick because he is slow when quickness is not required, assumes too much. The "bang—bang," in spite of expectations, may be so quick, from the apparently slow and sure man, that both birds, coming together, turn over and race each other through the air to the ground not 10 yards apart.

But it is not good style, this poking and following; it may be very admirable bag-making, and is so when the quick second barrel just described is added, but not when each barrel seems to require equally long to get off. But it is not pretty; it cannot by any stretch of imagination, even in the best built and most graceful of men or women performers, be regarded as good style. The gun that goes up to the spot and is off the instant it touches the shoulder represents the best of good style. But the author doubts whether it always means the most success in killing. At any rate, the highest exponents of the art do not invariably adopt this plan; probably when the top man is at the top of his form he can shoot in this way, with as great success as he can in any other: but that is the point. Who is invariably at the top of his form? The writer would back a great shot to disguise the lack of it from everyone but himself at any time,—him he cannot deceive,—he knows in his heart that sometimes he is a fumbler, but nevertheless one who has such mastery over the many manners of shooting, that if he cannot shoot to the right spot in one way he will assuredly be able to do it in another, provided he has a bit more time. At the top of his form he will be aware that he can rise to any

occasion; and the less time he has, the more brilliant will be his work, the less time he will require. He will be able to bring tall pheasants down, even those that only show 6 feet through the gaps in the fir trees, with as much certainty as if he had them outside and began his aim 100 yards away. But that represents his very best; he cannot do it every day, whoever he may be, and whatever reputation he may have to sustain him and to be sustained.

At covert side it is difficult to be always quite awake; the first few birds may be slovenly taken, and so the shooter may go on until a difficulty rouses him to exertion, and he becomes fully awake without recognising the process of arousing. In grouse shooting over dogs the same differences of form are seen, and others also. One shooter puts up his gun at the bird fluttering at his feet, waits until it gets 30 yards away, and kills it dead, and he may be quick enough with the second barrel. Another waits with his gun down until the birds are a proper distance away, then his "crack — crack" takes the farther off bird with the first barrel and the nearer next, and they tumble on top of each other.

There are more differences than the mere art of killing, and the manner of its doing. In walking up to a dog's point, for instance, the sportsman and the mere gunner proclaim their different "forms" as wide as the poles apart. The one walks like the crack man across country rides, wide of the "dogs," perhaps one will be 25 to 35 yards to one side or other; another man may walk right at the dog and level with his head as he draws on, until perhaps he consequently loses the scent; or turns and rodes the birds right between the gunner's legs, or would if he opened them and failed to get out of the way. In such circumstances the dog needs no help in pointing out bad form in sportsmanship, although he will not pass an opinion on gunning. The dogs that turned tail and went home, because of the frequent missing, existed, it is said, in the early part of last century.

THE BEST ANGLE TO TAKE THEM AT

EXCHANGING GUNS. A STRICK AND PARTICULAR LOADER

Note cartridges between fingers of the right hand

FORM IN GAME SHOOTING—II

THE manner in which various shooters hold their guns, or rather the position of the left hand, has been elevated to the dignity of a shooter's creed almost. It is not so important as is supposed. It is merely a fashion, which changes with generations in England, and has never assumed importance out of our very little island. The fashion at the present time is to push forward the barrel hand almost if not quite as far as it will reach, whereas two generations back the fashionable shooter for the most part placed his hand in front of and upon the trigger guard, and although a beginner now who did so would be told that he would never shoot, the author has seen as good work done by those who adopted that method as he ever expects to see.

The forward hand was an outcome of pigeon shooting, like the very straight stock. The first can be theoretically defended by those who do not require to swing with their game, just as the over straight stock is a good expedient for shooting a little more over a rising pigeon than the unassisted intention of the shooter would accomplish.

The method of pushing out the left arm may be good for some people and bad for others. There is not the slightest doubt that there are not only individuals who do best with either plan, but that different methods of shooting are each most suitable to different individuals.

Individuals may be divided into those who have long arms and narrow shoulders, and those who have short arms and are wide between the shoulders. The former class have much more room for play with three sides of the triangle (of

gun, left arm, and width of body), always kept at nearly the same length, than have the short-armed, wide-chested men, who, in swinging the gun a greater degree to the right than they turn the body, increase the necessity for one long side to the angle much more than the others do. But the hand holding the barrel is not a fixture, and can slide down to the fore end as the necessity for the long left arm increases by swinging to the right. This is obviously the Prince of Wales' method. However, when the swing round to the right is very far, the position of the fore end stops the hand at a certain point.

But the various manners of shooting also seem to necessitate two different methods of holding with the left hand. Much has been said about the necessity for holding well forward, but the reasons advanced in support of this method do not bear examination by the light of physics. It has been urged that the outstretched arm properly relieves the trigger hand from the necessity of assisting in the aim. It is doubtful whether it should, and it is quite certain it does not, relieve the trigger hand, but on the contrary throws more work upon it. The proof of this is very easy. Let the gun be grasped in the centre of gravity by the left hand and presented, the trigger hand being unemployed. It will be found a difficult but a possible operation. Then shift the left hand up the barrel as far as it will go, and try to bring the gun up from the "ready" to the "present." This will be found much more difficult, and probably impossible. Obviously, then, the outstretched arm is not the way to hold a gun if the left arm is to do the pushing and pulling about. This reason, which has been very much relied upon, breaks down entirely; but that is not to say that the forward hand is wrong, but only that its advantages are but little understood, although they are fully appreciated.

In order to present a gun at a point of aim that is still, probably the extended arm is always the best, whether the point of aim is a point in front of fast crossing game, or a motionless object, or a straight-away bird. This can be supported by another very simple experiment. The gun presented

at a point is much more apt to "wobble" than when it is intentionally kept moving in any one direction. One of its worst "wobbles" is a drop of the muzzle at the instant the trigger is pulled. It is caused by sympathetic action of the muscles. In order to avoid "wobble" of any kind, it is best to hold the hands as far on either side of, or rather in front and behind, the centre of gravity as possible. To try this, let the gun be presented and aimed without the butt resting on the shoulder; first, with the hands in the usual positions; second, with one hand on either side to right and left of the centre of gravity—that is, just in front of the breech. The tendency to "wobble" will be easily observed in the latter holding and aiming. If one should be so steady as not to see it, then a trial of the same thing in a high side wind will very quickly show which is the steadiest way of holding.

But even if we are such clever shots as to require no swing to get on to "the spot" for the first barrel, we shall certainly require to swing for the second shot, or, alternatively, adopt the plan of taking the gun down from the shoulder and re-presenting it. For this reason the position of the left hand is not ideal for the second barrel when it is outstretched to the full length of the arm, or when the arm is shortened with the elbow bent is the position ideal for getting on a point without swing. It is doubtful whether such a thing as the latter can happen on fast crossing game, because there is obviously unconscious swing in the act of bringing the gun from the "ready" to the "present."

There is no doubt that the learner, as well as the gunner who is temporarily out of form, are best served by a method in which they can most easily swing the gun, because it is by the act of swinging the gun with the game that good form is so often recovered, through increase of confidence, after a partial absence without leave. But the act of swinging can be done as much with the body as with the arms, and certainly lateral swing can be very effective when partly accomplished in this way.

One of the most fertile causes of missing is swinging round

with the arms and shoulders, and not with the hips. Obviously, if the shooter can always keep facing his game, the triangle sides made with gun, arm, and body all remain of the same length, and besides, the head and eye remain relatively in the same position, and absolutely in the same line with the rib and sight of the gun and game. If, then, a shooter can rely upon thus facing his game, he has more need of bringing up the gun to a point than he has of muscular contraction of the arms in pushing and pulling about the gun, in swinging with the game.

Still, we can none of us afford to be handicapped, and there are occasions when the arms must swing for all they are worth, and for this reason an easy position for the left hand is desirable, although that position need not necessarily be looked for on the trigger guard, or even on the fore end of the gun. There is a medium in all things, and assuredly those who strain to get their hands more forward than looks comfortable are likely to miss in consequence. This remark is made because the author has seen some beginners striving to reach forward, because they have read that it is proper; whereas they looked as strained as if they were on the rack, and besides, killed no game.

One of the most awkward attempts is to try to follow game overhead and fail to get enough in front to fire. There is then no time to turn round. When turning round is necessary, it should be done with the gun at the "ready," not at the "present," and not until the foot is planted firmly should the gun be raised. Any following round with the gun, or even with the eye if the game is going over, will not prove very deadly as a rule. The late Lord Hill and his brother, the Hon. G. Hill, were as good pheasant shots as anybody is, or has been, and it was very obvious that they both went round and planted a firm foot before looking for their game from overhead.

The two positions of holding the left hand may be seen in the shooting of the Prince of Wales, with the straight arm, and in Mr. R. Rimington Wilson, with the bent left elbow.

The question has often been asked, What should one do in

case a neighbour hits a bird that is obviously going away to die? It seems to depend on what your neighbour would wish: a bad sportsman, if that is not a paradox, may ask you why you are shooting his dead birds. That is only because he would rather run the risk of leaving wounded game than lose the off chance of claiming another bird. But a good sportsman would generally know by the appearance of the game whether it was likely to fall within reasonable distance; also he would know that by the unwritten laws of sport first blood constitutes ownership without any claim being made, and there should be no false pride that prevents wounded creatures being added to the bag as expeditiously as possible. There is another consideration. It is the worst possible form to cause much time to be occupied in looking for wounded game. It spoils the sport.

At the same time, one who values the good opinion of others will avoid a practice of sharing birds, or shooting at those more properly the targets of the next man. There is often a doubt as to whose shot a bird properly is. It is not good that both shooters should decline the chance for the sake of the other, but generally one man knows the other's form so well, that if the latter does not take the bird at one particular instant of time, it may be taken as left alone for the former to deal with.

Probably anyone who remembers the sound advice given in

> "Be to others kind and true,
> As you'd have others be to you,"

will make no mistake in shooting form, and will certainly never allow his gun to rake the flanks of his neighbours as he swings his body in walking in line, nor will he allow a gun at any instant, loaded or unloaded, in loading or unloading, to point at anybody for a fraction of a second. Besides which, he will rather let off a dozen woodcocks, unshot at, than run the risk of putting out beaters' eyes, or of being told that, "although that gun seems so harmless on the game, it has probably got some shot in it." Besides this, a shooter is responsible for the care, and also the appearance of care, of his loader, and the two

things are not quite the same; for although care implies that shooters' bodies are safe, it does not always refrain from attacking their nerves. For instance, when empty guns are jerked about, aligning everybody in turn, it is quite safe for the bodies, but very bad for the nerves of those who do not know the guns are unloaded.

Drawing for places is the best plan of posting guns. The author has found any other way, such as trying to give the best places to the honoured guest, very unsatisfactory. You never can give the best places to some people, for they do not know how to stand still. The writer has sometimes had the best shooting himself when he has taken the worst place, simply because the "honoured guests" were acting as "flankers," and sending the game elsewhere that should have gone to them. To show yourself as little as you like, but to move not at all, is obviously a part of good shooting form.

It is hardly necessary to say that it is not the best of form to tell a fellow-guest that the management of the beat is "rotten," and then to make some remark that your host translates into flattery. The fellow-guest may have taken your criticism as a useful hint to the host already, with your own "great authority" attached to it.

Somewhere the author has heard that His Majesty has expressed his opinion that a pheasant shared is a good deal worse than a pheasant missed; and in the head keeper's room at Sandringham hang some verses which therefore obviously have the King's approval, the more surely because they hang there in spite of their greater precept than polish. They appear to round off a chapter on form in shooting with a Royal behest. Part of them read—

"Never, never let your gun
Pointed be at anyone:
That it may unloaded be,
Matters not the least to me.
You may kill or you may miss,
But at all times think of this:
All the pheasants ever bred
Won't repay for one man dead."

Note.—See Chapter, "The Modern Shooting School," p. 353.

CRACK SHOTS—I

BAILY'S Magazine initiated an interest-provoking scheme when it set its readers to work to solve the difficult problem of which twelve men were the most expert in each branch of sport. It started with polo, in an article by Mr. Buckmaster, wherein the play of each man was reviewed in the true impartial spirit of criticism. The names had just then almost been officially given to the world in the Hurlingham "recent form" list; and this the readers of *Baily* confirmed. In one article the twelve best fishermen were voted for; and fly fishing, unlike polo, is a private sport; unlike shooting, it is not even carried out in private parties, and really there was nothing to go upon except the literary efforts of the fishermen voted upon. Because a man can write and can interest fishermen, he need not necessarily be a clever angler. Francis Francis was the one; by all accounts he was very far from the other. Consequently, the voting for anglers of highest form was on a totally different basis from that of the less private as well as the wholly public sports. Had we set the ballot-box going for crack marksmen (exclusive of riflemen and pigeon shots) sixty years ago, the man who must have come to the top was Colonel Hawker. He would have been there by right of the story he told to young shooters, for whether he was the superb marksman suggested by his writings or not, there was nobody to challenge it—no one who had shown that he knew woodcraft and watercraft half as well. Probably there has never been anyone since who could hold a candle to the Colonel for a complete knowledge of the latter art and science (for gunnery was as much a concern of his as the habits of fowl).

Had we voted, we must inevitably have placed him top of the tree; because game shooting then was not a thing to be conducted in large parties, but was a concern only of my friend, my pointer, and myself. There were no spectators except the beaters, who were up the trees to mark, and the gamekeeper, who carried a game-bag, and perhaps rode a shooting pony.

Pigeon shooting did a little, a very little indeed, to make for publicity years afterwards; and there were occasional matches shot at partridges, but these were sometimes more by way of testing the game capacity of estates than the shooting skill of the marksmen. Thus on one occasion there was a match shot in the south-west corner of Scotland and in Norfolk on the same day, and although Norfolk won by a little, the bags were near enough together to prove that the two districts were then very equal as natural partridge country. That they are very unequal now only proves that the more care has been bestowed upon game in the Eastern Counties.

But had there been any voting for crack marksmen in those days, it is certain that, after Hawker, the men who were most talked of (the match makers) would have come out next. They alone were heard of by all sportsmen, and the sporting magazines had chronicled their prowess. Other shooters were "born to flush unseen, and waste their powder on the desert hare"—to misquote to fit the occasion.

In these times in a sense it is different. Men do see each other shoot in parties up to fourteen. But it is clear that when parties, even half as big, are constantly changing, and meeting fresh guns every time, that the form of any individual amongst them soon gets to be known as accurately as that of any racehorse in training at headquarters. This is how it happens that it has been possible to select a dozen men of mark and marksmanship difficult to displace in the consensus of opinion of the men they meet and shoot with.

But just as the majority were never heard of when George Osbaldeston, Lord Kennedy, Horatio Ross, Coke of Norfolk, Colonel Anson, and the rest, were shooting matches, so it may very well be that the best shots of our day never shoot in big

parties, and are not known as good shots at all. There are still large numbers of shooters so much sportsmen that they think of woodcraft and sportsmanship first, and only of marksmanship as a secondary and necessary accomplishment.

What, after all, is putting a bullet into the heart of a stag at 100 or 150 yards distant? Any gun-maker's assistant could make sure of doing it at the standing deer, provided he did not happen to suffer from buck fever, and unless he was a sportsman at heart he would not. But to stalk that stag is a problem of a very different character. The novice will probably make a mess of the simple business of following the heels of his stalker—he who carries his rifle, finds the stag, stalks him, puts "his gentleman" in position, places the rifle in his hand, and tells him when to fire. When the latter can do all that without the stalker's assistance, he may, and will, flatter himself that the mere shooting straight was quite an elementary stage in the art of woodcraft, and that marksmanship counts for very little indeed in the most fashionable and most sporting use of firearms in Britain. Besides this, stalking is as private as fishing with the dry fly; and again, had our ancestors had to select a stalker for premier position, it would have been Scrope first and the rest nowhere, just on the same grounds as before: Scrope had described his splendid sport in his book.

Then, obviously, the shooters of grouse over dogs are barred also; because, two being company and three none, it would be impossible to take a consensus of opinion. If it were possible, what principle would choice be made upon? The mere shooting straight is very little of the work to be done. Surely the man who can handle his own brace of pointers or setters, a retriever also, and shoot as well, is a step above him who can only shoot. Then the man who can walk for ten hours is far and away better than he who is beaten in five.

In the old partridge shooting matches it was the pace that killed and the pace that won, and there are few men who can walk fast all day and shoot straight; still fewer whom people would name as the best, because they would not have seen them. Then there is the big-game hunter, who must be judged, though

probably wrongly, on the size of his bag. He, too, does not perform in public. And all these sportsmen have to be left out of count in such selections as the readers of *Baily* have made. Their verdicts, as a matter of course, have gone to the men who can best deal with streams of game by means of three ejector guns and a couple of loaders. It is not so much a question of shooting straight as shooting straightish and often. The man who kills two out of four in one unit of time is better than he who kills three out of four in twice the time. At the end of the day the former's bag will be the bigger, he will have had more sport, and, as the late Prince Duleep Singh advised his sons, "Cartridges are made to be let off."

There is good reason why the driving of all kinds of game should be the most popular sport with the greatest numbers. The days when the squire shot game every day in the week, and no faster than he could eat it, have long ago departed; this is not because the "hunting" of a pheasant with gun and dog is not as good sport as ever it was, for the pheasant is at least as interesting to hunt to his lair before he is flushed and shot, as is the hare to hunt until she can move no more. In both cases the individual gives vastly more sport than when it is shot as one amongst hundreds. But the "leisured class," as Americans call it, are constantly finding more work to do, more that must be done; and we shall soon, like the Americans, have no leisured class but the unemployed, just as they have none except the telegraph-boys. That is the reason sport has to be taken in junks. It does not make for a knowledge of woodcraft; but there is little woodcraft necessary in ordering the beating of coverts crowded with pheasants. Then, although the single driven bird may be a particularly easy shot to the shooter, difficulty increases precisely in the same ratio as numbers. The excellent shot who can kill 10 pheasants quickly and consecutively cannot necessarily kill 30, much less 100, in three and ten times the period. To do it, he must be in condition of the best—at least his arms must. There are crack shots like Lord de Grey, who in his prime was in a class by himself in the butts,

but would not have held his own with Lord Walsingham in a stiff day's walking up game. Some of the crack shots have not been above shooting-school practice at streams of clay birds, sent over them in order to get the arms used to working each gun fairly, quickly, and accurately, and without the man becoming demoralised by suddenly asking too much of his muscles. The writer has found his arms aching under the work as if with rheumatism.

The voting placed Lord de Grey still at the top of the tree; one shooter remarking that he was quite in a class by himself. Lord de Grey uses hammer ejector guns, and he can always shoot slowly, and on his day (and they are mostly his days) he is said to be just as quick as the chances occur; some of his greatest admirers declare that you can never tell by the interval when he changes guns. Mr. R. Rimington Wilson and Lord Walsingham are bracketed for second place: the latter does less shooting than he used to, and the former more. Most of the modern generation have gone to school to Lord Walsingham, and Mr. Wilson is described as the best grouse shot in the world. The Prince of Wales takes rank amongst the twelve best, and it is said, to the credit of the Royal sportsman, that he would always draw for places if he were allowed to do so. His keenness is beyond question, and his experience abroad as well as in this country is well known. As a shot he is very quick. Prince Victor Duleep Singh is remarkably quick too, and as accurate as can be. Low flying pheasants he can kill regularly without hitting them elsewhere than in the head and neck, but then he went to school to his father at ten years old. Amongst the men who have come to have great credit as shots of late years is Mr. J. F. Mason, who now has Drumour, long shot over by the late Barclay Field. Mr. Mason can kill wild pigeons as well as game, the former with results never exceeded. The Hon. H. Stonor is another gunner selected by the voting for the twelve cracks; he is particularly good at high pheasants, and is built for shooting. Mr. Wykeham Martin and Mr. E. de C. Oakley are said to be quite exceptional performers in a high wind. Lord Falconer, whose shooting with the late Baron

Hirsch in Hungary was a revelation, and Lord Ashburton, who gave us all a lead in partridge preserving, are noted for being graceful shots, and as effective as any; and Mr. Fryer of Newmarket is, with a 6¼ lb. gun and 1 oz. shot, as deadly as any man living, on driven partridges. Mr. Arthur Blyth, one of our greatest partridge preservers, and Mr. Heatley Noble are both included in the marksmen twelve. It will be noted with interest that several of these gunners use hammer guns, and most of them guns of full weight and a light charge of shot.

It is very likely that *Baily's* scheme found severe critics, but after all it is a better plan than that which allowed Hawker and Scrope to write themselves into fame, and it will certainly go to make the History of Sport.

The author regrets that he did not see the shooting of pheasants by the late King of Portugal, whom he used to see practising at the running deer at Wimbledon about the year 1887. The King's method of shooting pheasants alternately from the right and left shoulder, using one hand for each shot, has been described as quite unique. With a loader on each side it is a theoretical saving of time to take, and be presenting, one gun before relinquishing the other, and the King's method and success were greatly admired at Sandringham. Such a feat is certainly more difficult than the usual method of using two hands and shooting from only one shoulder, and goes to prove that driven pheasants are not as hard to learn to shoot in the usual way as some have asserted. The feat does not appear to be beyond reach of anyone who practises for it, and is a little in the nature of trick shooting, not comparable for a moment with the snipe shooting described in the Introduction to the 3rd Edition, when more was got out of a gun than, by common standards and tests, is supposed to be in it. Nevertheless, 200 well selected pheasants shot in 35 minutes was a performance that marked the royal marksman.

CRACK SHOTS—II

THE author having criticised the article in *Baily's Magazine* in the above remarks, was nevertheless himself responsible for it all, except the voting, so that his criticism is obviously intended in good part, and is only to indicate what a very limited class of shooting comes under review in an article of the kind. There have been wonderful shots who cannot be compared. For instance, good snipe shots, who saw Mr. Hugh Owen shoot snipe in Pembrokeshire thirty-five years ago, told the author that he not only beat them, but out-classed them, as well as everyone else he ever met. What surprised was the great distances he killed these birds consecutively with No. 5 shot—the size always used by Lord Walsingham.

Since that article was written the author has often been told that Lord de Grey is the only shooter who is as good as his reputation. No doubt he is as good, for many of those who voted put him "in a class by himself," and more particularly when the shooting was extra difficult, as in a strong wind and when birds were far out. Then his hammer ejector choke bores, which are handed to him at full cock, and always loaded with 42 grains of Schultze powder and $1\frac{1}{16}$ of No. 5, have a way of finding the right place at a greater rate than any others. It has been said of him that you can never tell by the interval when he changes his guns. The two most discussed incidents in his shooting have been when he accomplished five grouse coming together, by changing guns after he had shot one barrel, and then had time to get two more of the five in front of him and two behind. On another occasion, in walking through covert a cry of "mark" brought round Lords de

Grey and Walsingham, when, amongst the trees, they accounted for four partridges each, or the whole covey of eight birds. Lord de Grey is a very deliberate shot when he has time to be so, and he has been seen to swing his gun some distance without succeeding in getting on his game, and in consequence to refrain from shooting. Therefore no question can arise about the fact that he aligns, at least when there is time. Lord Walsingham wrote some years ago to describe to a newspaper his method of killing wood pigeons, which, amongst other evolutions, had been occasionally chased by a falcon. He said: "The way in which a certain measure of accuracy, although by no means a satisfactory measure to myself, was attained in shooting at these wood pigeons could scarcely be better described than in the words of your correspondent. He writes: 'I myself race the birds, as it were, in my mind without bringing up the gun; I then swing it and fire. This swing or pitch is all done in one motion'! So far I go with him entirely, but when he adds, 'and the gun is not stopped even after the trigger is pulled,' I differ from him in practice. In my case the gun is stopped at the instant of pulling the trigger, having been swung to as nearly as possible to the exact spot the bird may be expected to reach by the time the charge can get there to intercept it." Lord Walsingham was using 3¼ drams of Hall's Field B powder and 1⅛ oz. of No. 5 shot from a cylinder gun.

The number of cartridges used for the 1070 grouse in the day in 1888 was 1500. As a feat of endurance and woodcraft this is hardly likely ever to be surpassed, especially with black powder. Only a shooter who never suffered from gun headache could have done it. But even when that is said, the keeping the birds on a 2200 acre moor for 20 drives is the point of the story. When the late Sir F. Milbank killed his 728 birds, he reduced his shot to ⅞ of an ounce in order to get penetration, and declared that he would still further reduce to ¾ of an ounce for the sake of still more penetration.

Mr. F. E. R. Fryer has been observed to have three pheasants dead in the air at once, and yet in another page he is

described as a deliberate shot. It has also been shown upon another page that it takes just $\frac{1}{3}$ of a second to bring the backward movement in recoil to rest. Probably the reaction of the shoulder takes as long after recoil, so that if the tallest first bird fell from 40 yards high, and took, by the action of gravity, $2\frac{3}{4}$ seconds to reach the ground, when quite dead, we may examine the time thus:—

Recoil and reaction after first kill . .	$\frac{2}{3}$ seconds
Fresh aim and let off	$\frac{3}{4}$ „
Recoil and its reaction after second kill .	$\frac{2}{3}$ „
Fresh aim and let off . . .	$\frac{3}{4}$ „
Total 2.83 or about	$2\frac{3}{4}$ seconds

Three-quarters of a second seems to be ample time for getting aim and letting off. Partridges and pheasants when there is no wind travel about 60 feet a second, and Mr. Fryer has also been observed to take quadruple toll out of a covey; if we may assume this done within 40 yards in front and 40 behind, we have 4 birds killed in 4 seconds.

This would represent the times:—

First recoil and recovery . . .	$\frac{2}{3}$ seconds
Second aim and let off . . .	$\frac{2}{3}$ „
Second recoil and recovery . . .	$\frac{2}{3}$ „
Third aim and let off . . .	$\frac{2}{3}$ „
Third recoil and recovery . . .	$\frac{2}{3}$ „
Fourth aim and let off . . .	$\frac{2}{3}$ „

So that four from one covey of partridges represents quicker shooting than three pheasants in the air together, provided, of course, that the partridges are not coming against a wind, and are not in straggling formation.

These two little calculations are made in order to show the enormous importance of as little recoil as possible, and that is also the reason that the author has set himself to design a ballistic pendulum capable of easily taking the momentum

of recoil, and the momentum of the shot, at the same discharge, which is a thing that cannot be done by the chronograph, because that instrument only records the time (not the striking velocity) of the thing that hits it and breaks connection, and that thing is the fastest pellet instead of the average of all, or the total of the pellets. Powder-makers can still further reduce recoil; that is, if they are encouraged by a general demand for those powders that give the least recoil for an equal power of shot impact.

The author was reminded not long ago by the Rev. W. Serjeantson of an occurrence of thirty years ago. Three guns, of which he and the author's were two, were shooting together over dogs, and twice on the same day, after a brood of grouse had risen, the author, having been fully occupied in shooting, asked the keeper which way the rest of the brood had gone. His reply was on both occasions, "They have all flown one way." That is, there were six up and six killed, which sounds much more commonplace than it really is, because, as it so seldom happens that three guns do shoot together over dogs, when by chance they do so there is a very good excuse for two barrels to be let off at the same bird, but of course only when the birds rise all together, as they did on these occasions.

The most sporting bird the author has made the acquaintance of is the Virginian quail. Three guns advancing to a point at these birds would not often get six birds at the flush of the covey, although, on an occasion when they rise at twice, two guns have got five, as happened once when, with Mr. Hobart Ames, who is President of the Shovel Trust in America, the author was shooting over his and Mr. H. B. Duryea's celebrated setters, one of which could easily have earned in America £500 a year at the stud if his owner had not preferred to shoot over him. But it is not at the rise of the covey that these birds are difficult. As soon as they are flushed they fan out and take to covert, and their twisting second rise, with the scrub between them and the gun, makes them very difficult. Mr. and Mrs. Duryea are both remarkably good quail shots; the author could not say which is the better, but he believes

Mr. Duryea claims to be the better turkey shot, a claim which the lady admits. Mr. Duryea can even make the decoy turkey gobble by the accuracy of his shooting upon occasion. In Tennessee the author was by their kindness introduced to the old English fashion of shooting by the use of shooting ponies. The mounted guns, whether one or three, had three handlers of dogs, each mounted also, and each working a brace of speedy dogs, and by that means covering three-quarters to a mile of country at a beat. The horn is used to sound "a point," and then the six miles an hour "fox trot" is increased to hunting speed, until the point is reached, when the shooters slide off and shoot. The useless (?) nigger can, at such times, manage to lead six horses. This sport is a sort of cross between hunting and shooting, as also was that of ancient England, if all accounts are true. So was hunting in the New Forest, when William Rufus missed his way, and ran up against an arrow by mistake.

All good shots at their best must shoot in the same way: what differs is the way they see their own performances and the way they describe them. This has been dealt with on other pages. But likenesses do not end with actual aiming, for somewhat similar to the American quail shooting described above was the method by which the late Maharajah Duleep Singh killed his 440 grouse in the day. That is to say, he had several brace of dogs with as many handlers going at the same time, and rode from point to point. But for quickness of shooting and changing guns he has probably never been beaten.

Every shooter, as far as the author can learn, is sometimes surprised at missing with the first barrel, and at the ease with which the second barrel accomplishes the more difficult task. Surely we may take a lesson from the crack shots who have this experience. The pace at which they are obliged to swing to catch up for the second shot necessitates an uncontrollable gun at the end of the swing—a gun going faster than merely keeping up with the bird, and they kill because they are more forward than they thought. But if so, it may be asked, "What then is the use of alignment?" Precious little for that shot

certainly, seeing that there is no time to correct aim. But alignment does not mean looking down the rib and seeing the bird at the end of it; it means looking down the rib *at* some point in space which moves as the bird moves, and its principal value is not that it is good to correct aim, but that it guides the first swing to the spot. For instance, in the second shot the gun is at the shoulder always, and swings in to the correct place while always in alignment with the eye.

Ten years ago, Sir Ralph P. Gallwey picked out the following as the best shots in England:—Lords de Grey, Walsingham, Huntingfield, Ashburton, Carnegie, Wemyss, and Bradford, the Maharajah Duleep Singh, Messrs. F. E. R. Fryer, A. Stuart Wortley, R. Rimington Wilson, and F. S. Corrance.

Bailey's list of voted-for good shots was—

1. Earl de Grey.
2. Mr. Rimington Wilson.
Lord Walsingham.
3. Mr. H. Noble.
4. Hon. H. Stoner.
Lord Falconer.
Prince Victor Duleep Singh.
H.R.H. the Prince of Wales.
F. E. R. Fryer.
5. E. de C. Oakley.
Lord Ashburton.
6. A. W. Blyth.
C. P. Wykeham Martin.
Prince F. Duleep Singh.
Lord Carnarvon.
7. Lord Warwick.
Lord Westbury.
Sir Robert Gresley.

Prince Victor Duleep Singh is no doubt about as quick a game shot as his father before him; the latter as a shot compared in the same way with Englishmen as his countryman "Ranji" compares with our slower cricketers.

The Prince of Wales is very quick and very keen; not at all a feather-bed sportsman, he is ready at all times to face the weather for a very little sport. His duck shooting in Canada and his jungle sport in India are within the recollection of everybody. That he does not draw for places is because a host's will is law even to the heir to England's crown.

The Hon. H. Stonor, who is not easily beaten for style and

accuracy, uses 33 grains of E.C. No. 3 and 1 oz. shot. He uses hammer ejector guns, as do the Prince of Wales, Lord de Grey, and Lord Bradford, who once did some record shooting in Scotland.

Mr. Wykeham Martin is supposed to be as good in a gale of wind as any man, and his rabbit shooting across rides is at least as good as anybody's. He has made a name for himself on snipe in Ireland, and has the very sporting reputation of being the most unselfish shooter in England.

Mr. R. Rimington Wilson, who has been referred to on another page, is specially good at low crossing grouse, which are generally considered much more difficult than those which show against the sky, and he takes the near birds just above the beak, and as he was described in *Bailey* by some shooters as the best grouse shot in the world, here is another very good proof of alignment being the correct thing.

Mr. Arthur Blyth has accounted for 64 partridges in one drive, and is considered a brilliant shot.

Mr. E. de C. Oakley is probably the best shot in North Wales; he is especially good in a gale of wind, at hard feathered game, and meets the difficulty with a big charge.

Lord Ashburton is said by several of the voters to be a most graceful shot, and his accuracy is beyond dispute.

Mr. Fryer complains that he gets older while the partridges do not; other people think he uses a $6\frac{1}{4}$ lb. gun and 1 oz. shot in a way to prevent them getting older.

POINTERS AND SETTERS

TWENTY-FIVE years ago the fashion was to decry driving game, and to hold up, as the good old sporting plan, the use of gun-dogs in the pursuit of partridges and grouse. But this was only a fashion of the fashionless. Shooters were not so childish as to decline to shoot in one method because they could not do it in the other, and half the grouse moors and three-quarters of the partridge ground then, as now, could not be worked with pointers and setters without sacrifice of a large portion of the game. Either it was driven away for wiser neighbours to bag, or else it died of old age after doing as much harm to its successors as any early Hanoverian king of England—that is, as much as possible. The reasons for the growth of wildness are many, but in dealing with dogs it is only necessary to take the birds as we find them, and to get them in the most sporting fashion that is left open to us.

At the same time, it may be remarked that the Press changed completely round after the publication of the Badminton shooting books, and it became as unfashionable to write of shooting over dogs as it had been to write of driving.

But the views expressed in the Badminton books were drawn from Yorkshire and Norfolk, and the result was that this time both sportsmen and the Press attempted to force an imitation of those methods that in those counties had only been adopted as a choice of two evils, when birds became so wild that it was a question of driving or no game. This fashion has made the act of shooting take rank above the all-embracing "sportsmanship" in the minds of those who have grasped at and acquired the first-named part without aiming at the whole.

MR. B. J. WARWICK'S COMPTON PRIDE, A POINTER WHICH TWICE WON THE FIELD TRIAL CHAMPION STAKE

CAPT. H. HEYWOOD LONSDALE'S IGHTFIELD DUFFER, THE CELEBRATED FIELD TRIAL WINNING SETTER

CAPT. H. HEYWOOD LONSDALE'S IGHTFIELD ROB ROY POINTING, AND BACKED BY PITCHFORD RANGER

But this view is not likely to last longer than the mechanical part of shooting remains a difficulty. It is little likely to do so for long, with so many shooting schools, where clay birds can be sent over the gun in streams at all angles and all speeds. Here the management of two, three, or four guns can be learnt, ambition can be served, and after that a decline in keenness will generally set in. One of the greatest and best shooters of the seventies and eighties, one who carried most weight in the Badminton book, seems to have almost given up, and it may fairly be assumed that when the mechanical part of shooting is once gained to perfection, it leaves no room for further ambition.

But this is far from being true of shooting over dogs. There is so much more to learn than the mere mechanical part of shooting. Whether one breeds dogs, breaks them, works them, or has them worked by others, they are a constant source of anticipation, and anticipation in sport is of far greater interest than realisation.

Possibly one does no good to the interest of anticipation by attempting to assist sportsmen to the choice or breaking of better dogs. Those the author began with were his ideals until he knew of better, and a super-ideal would be useless were it not impossible. But when a poor team of dogs may lead to the abandonment of canine assistance in shooting, it is another matter, and everybody who knows the pleasure given by dogs should strive to improve the race.

For the last forty years there have been held public field trials on game for pointers and setters. Whether these events have been worked off upon paired partridges in the spring, or contested by finding young broods of grouse just before the opening of the season, they have given breeders and sportsmen the chance of breeding by selection for pace, nose, quartering, and breaking. Unfortunately, they have left out stamina. There have been what were at the time called "stamina trials," but as they were sometimes won by slow dogs they did not merit the high-sounding title, and for real stamina trials one has to go to America.

Trials for ability to stay are much more necessary now than ever before, because the dog shows have ceased to be any assistance to breeders of working dogs. When it was possible to compare at shows the external forms of pointers and setters that had succeeded at field trials, they were of some use, on the ground that true formation is suggestive of stamina. But since separate breeds of dogs have been evolved by the shows for the shows, the working dogs are either not sent to them, or do not win if they are sent, so that the show-winning pointer or setter is taken to be bad and of a degraded sort unless the contrary is proved. This is a great pity, for there is no doubt that stamina is the foundation of almost every other virtue in the pointer and setter.

A dog that cannot go on long has the period of his daily breaking restricted, he does not learn wisdom, he does not gain enough experience to make a proper use of his scenting powers, and if, at last, success in breaking is achieved, then the reward for labour expended is half an hour's fast work instead of half a day of it.

This means that the shooter must have a large kennel and one or two kennel men, instead of a small kennel easily looked after by a gamekeeper without hindrance to his other work. The question then becomes serious, and those who live in London or in the neighbourhood of big towns usually have not the necessary room for the healthy maintenance of a large kennel of dogs. If they take moors in Scotland or Ireland, the kennels there are usually only of service in the shooting season, especially if the moors are not taken upon long lease. Scotland is bad wintering for dogs bred in England, and although it must not be forgotten that the Duke of Gordon, Lord Lovat, and many other sportsmen wintered their famous kennels of setters in Scotland, their dogs came to have coats much thicker than are to be seen now upon setters—that is, they had less feather but more body covering. At least, that was the opinion formed by the writer on paying a visit to the late Lord Lovat's kennel in the early seventies. At that time this kennel and that of Lord Cawdor were the only representatives of the

old black-white-and-tan kennel of the Duke of Gordon, although the blood of the latter sort was widely spread as crosses in other races of setters. This was obviously so in the black-and-tan kennel of the late Lord Rosslyn (who introduced bloodhound to get the colour), and in that of many English setter kennels. They were known as English setters, and shown as such, only because there was a mistaken idea that Gordons were black-and-tan, without white.

Stamina, then, must be improved if dogs are to be generally popular where they can be used. But some few of the winning field trial workers would look foolish after 30 minutes' experience of a bed of strong heather. Shooters at Aldridge's annual sale are frequently observed purchasing two or three little highly broken weeds that could not possibly give satisfaction. There is often a great deal of hustle, fuss, and fictitious pace about the very little dogs that are now sometimes bred, but their bolt is soon shot, and they are a hindrance to sport for the rest of the day. The old dogs that were regarded as stayers did not look to be in such a mighty hurry; they had a long easy stride, with no up and down action (it is that which tires). As being much bigger, they were probably much faster than the little hustler division now so numerous, and some of them could keep up the pace all day. Many could do a half-day's work, and some of those that were *not* regarded as stayers were brilliantly fast and slashingly bold for two hours in the morning and another two in the afternoon. The author remembers one of the latter that after winning the National Championship at the Shrewsbury Meeting in the spring put out his shoulder. The mend was a bad one, and although this accident destroyed the stamina it did not interfere much with the pace of this extraordinary dog. Afterwards, for some years, he could beat the best in a most successful field trial kennel for 20 minutes, but then he was done for. What has been said about the uselessness of non-stayers may be emphasised by the experience of this dog, for, although he was often taken out in the spring as a "trial horse" for young ones, it was thought useless to put him into

a shooting team for Scotland. That is to say, the most brilliant 20 minutes worker was useless then, and is so now.

It is not often that absolute proof of the value of any individual points in the dog is obtained. But here was one, proving that shoulders have little effect upon speed, but are all-important for staying. When Mr. A. E. Butter's Faskally Bragg was winning Champion honours on the bench and in the field too, we had the exhibition of a heavy-shouldered dog winning at the shows, where true formation for staying was unknown, and also in the field trials, where it was never tried. Nose, speed, and beauty of attitude in pointing and backing placed this dog at the top, but had there been real stamina trials he would never have been heard of. Once the writer saw him on a freshly-turned sandy plough, where he was hunted against Mr. A. T. Williams' very small pointer, Rose of Gerwn. The latter went 100 yards for every 20 that Bragg tumbled over. Yet here was your show Champion beaten to a standstill, on the question of external form alone, by an ugly-headed little pointer that could not have won a prize at a show in a class by herself. Yet for heart and courage, for pace, and probably for stamina, there have been few to equal her in the last decade.

The dog-show setters are most beautiful creatures, but the points on which they win here and in America are not the points that a sportsman requires. "Feather" goes a long way towards victory, but in America they *shear* their setters before the shooting season opens. The reason for this is that the burrs there are not only a nuisance, as they sometimes are here, but a total prevention of sport. Any coat that collects them brings the dog to a standstill in a few minutes. They are much smaller, but the spikes are sharper and stronger than those of the English plant.

Slack loin is only a drawback at the shows, but it *stops* a dog in work. A long, refined head is a beauty at the shows, but it holds no brains that amount to anything. But worse than all this is the fact that the hunting instinct has lapsed in the show breeds. To be induced to range they must be *excited*.

Now, in the truly bred pointer or setter you may start by repressing, go on by directing, and end by many "dressings," but you cannot weaken the hunting instinct, however you try to do it. In the former sort you have to wind up the clock and put the hands right at every turn, in the latter you have to put the regulator right once and the works will do the rest. It is impossible to endow with instinct at all, and especially is it impossible when excitement has taken the place of the hunting habit. You have only the excitement on which to work to re-create a love of hunting, at the same time that you have to repress excitement in the interests of breaking.

It is not very wonderful that show-bred dogs cannot win field trials. To ask a breaker to educate them is a little worse than to turn Irish salmon into the Thames and expect them to come back there. When the last Thames salmon was killed the last instinct to return to the Thames vanished from *Salmo salar*. You can no more get it back than you can make a field trial dog out of a show-bred one, or bring the dead instinct to life.

Having got the right blood in the form of a puppy of ten or twelve months old, and one that has learnt no bad manners at walk or in some bad breaker's hands, there is a straight road to success, but one that is not always taken. The first thing to teach a puppy is to understand all you say to it. Until this has been accomplished, the loudest shouts of "Down charge," "Drop," or any other order, are in danger of being mistaken for just the opposite to what is intended. Most of the clever breakers at field trials have unique signals, invented by themselves, and practised by nobody else. It is a good way there, and in shooting, because your dog is not then confused by orders given by other people. One man drops his dog by bringing his stick to the ground, and signals it forward by holding up his hand. The general practice is just the reverse. It does not matter what signals or words of command are used if they always mean the same for the dog.

The more often orders are given, and obedience to them is enforced, the more instinctive becomes the dog's habit of

obedience; but against this must be placed the fact that a puppy should never be tired of a lesson. A lesson, before entry on game, should always be only a part of a game at romps to the dog. Consequently, it must not go on so long that the puppy tires of romping, or be repeated so often in the game that the youngster thinks it "a bore."

Obedience is one thing, prompt obedience quite another; and it is the latter that serves the sportsman, not the former. It is the last stage of hand breaking to ensure prompt obedience when hesitation or unwillingness has gone before. These two stages generally occur in dropping to hand and gun lessons, and in answering whistle, all of which will require a little pushing and pulling force to be used in the early stages, until the meaning of the teacher is grasped by the pupil. Up to this point the order has to be repeated many times as the force is being used, in order that the pupil may grasp the meaning, which he will only do gradually. But after the lesson has once been learnt it is a bad plan to give any order twice. It should be once only, followed by obedience or punishment. This sounds severe, but it is the method for saving the necessity for severity in the future.

After the hand-breaking stage comes temptation during excitement, which is a very different thing from mere "cussedness," as the Americans call it, in hand breaking, where a pupil only disobeys for the sake of disobedience. That is the reason why prompt and instinctive obedience has to be obtained before the canine pupil goes out into the fields or on to the moors, and sees game. When this excitement begins, all hand-breaking lessons may be forgotten on the spur of the moment, and yet it is extremely important that they should not be, and that there should be no necessity for punishment, and as little as possible for restraint.

It is to avoid these misfortunes that hand breaking should culminate in forced promptitude on the pupil's part. Up to this time your puppy has dropped and answered the whistle because it pleases you and does not hurt him, and he has done it, possibly, as if he thought you took a particular interest

in seeing how long he could be about it. But in the field, and in the presence of hares, such deliberation is a premium on forgetfulness of the breaker's existence. Then a hare is very likely chased, and a season's unnecessary work, and of a negative value, has become obligatory in an instant.

On the other hand, if the last lessons in hand breaking are of a kind which make the puppy think that a word and a blow are not separated by distance between the man and dog, hares will never prove a trouble or distance a danger in the field or on the moor.

The way the author brought about prompt obedience was by trickery. Puppies romping in lines were ordered to drop, then the lines would be passed round a tree in front of them, which would, by its position, give a free run to the dogs of 40 or 50 yards when they were called on. But the instant before they reached the limit of the cord the order to drop would be given, so that any hesitation would inflict a sharp tumble by reason of the full limit of the cord having been reached at a gallop. One lesson of that sort gives the dog a sense of the wonderful powers of his breaker, who may be hundreds of yards away when the sudden power is exerted; and about two or three such experiences, in the last week of hand breaking, give the man in the field apparently mesmeric powers over his pupil. It need hardly be pointed out that, to succeed, the dog must expect, or suspect, no trap. Consequently, he must be regularly exercised in his cord, and the trick must not be repeated until the former attempt has been totally forgotten. This can be the more readily brought about by several times dropping the dogs in the ordinary way, and allowing them to find themselves free when the order to come forward is given. In the mind of the pupil, it must not be the cord, but the breaker's order, that does the jerking.

Usually the author has associated this jerk with the explosion of a pistol, of course after making sure that the dogs did not fear a pistol, and were not "gun-shy," or to be made so. See what power this gives a breaker at distances beyond the travel of his voice or whistle! A puppy is ranging beautifully

half a mile away nearly, and cannot hear your whistle reminding it of its distance. In the contrariness of canine nature, that is the exact instant the only hare in the parish will select to jump up before your puppy's nose. The strange form and sudden appearance, as from nowhere, will surprise; another instant, the ancestral wild beast of prey will take possession of your cherished pet, now nearly in the next parish, and you would be helpless to intervene but for the gun in your hand and for its associations with the tree and the cord in the park. You fire at the exact instant before canine surprise is succeeded by a burst of coursing speed, and your pupil is glued to the ground, while your only hare is preserved from extinguishing her race and your chances of a broken dog as well.

The worst of permitting puppies to chase once is that they soon learn to chase the trail, or "drag," of hare when none has been seen. It is difficult to be sure when a puppy is doing this; but never wait until you are sure, is the author's suggestion: fire at once. Then, if your young dog has been broken on practical lines, you by one operation serve two ends, for you stop a chase and rebuke your dog if there was a hunt, and if not, you have only given an unnecessary lesson in dropping to shot, which generally does good and never any harm, for it disturbs game far less than whistling or shouting.

It is not intended here to repeat the elementary advice about hand breaking. It is much more simple to say that a puppy must be talked to like a little child. It will be much quicker than the child to take a meaning, but it remains a child, if a quick one, all the days of its life.

If your puppy has unfortunately learnt to chase hares or to kill chickens before you begin with it, severe measures will have to be taken to cure these crimes; but this should not be done until after the pupil has been entered to and become fond of game, so that it is essential to enter a hare-chaser where there are no hares, and a chicken-killer where there are no roosters. The love of one kind of game is half a cure of a too energetic fondness for another, and in order to set up this love of game to its fullest extent, your pupil must neither see

hare nor think hare until the entry on game is complete. If you thrash one minute for chasing chickens, the next your pupil will be half-hearted about finding partridges, and will probably blink them when found.

The author was very successful at field trials, and in having perfectly obedient high rangers of wonderful courage and endurance, and this success was attained on the principle of never giving the pupils a chance to do wrong until they were well established in the practice of doing right. That is to say, until they would quarter fast and freely, and find and point game without caution, and back each other at any distance, they were not tempted by the sight or scent of hares, or not by intention. Afterwards they have to learn to hunt for partridges in the midst of hares and with the scent of them everywhere, and it is only by their extra fondness for winged game that they will hunt across and across the foot scent of dozens of hares without taking any notice of it, and will nevertheless point the body scent of a hare when they find the beast in its seat.

All this comes to the high-couraged dog practically by nature, provided the breaker begins at the right end of the education and takes step by step, as suggested here in default of a better method. There will be no shouting and storming, or whipcord and wailing, but a steady progress towards perfection, granting always that the pupil has nose, sense, pace, and stamina.

Pointing and backing may or may not come naturally when the youngster finds that he cannot catch his birds after a few tries, but they are easily encouraged to come sooner by the use of the voice on the hand-broken pupil, or by the use of the check cord. It is, however, just as well to let a puppy chase the birds until he naturally points them. This is education of the best kind in "locating" the game, which implies the quick recognition of the difference between body and foot scents of birds. In the same way it is a good plan to let a puppy run in a few times to a pointing dog to flush and chase his game. This is not doing wrong, for up to this stage the dog will have

received no intimation that chasing game and flushing it are wrong, except that hereditary instinct may prompt the puppy to point and also to back.

It is not well to insist upon instant dropping to wing, until a young dog has learnt how to point steadily and to draw up boldly to the game at the side of his breaker. This becomes a nerve-trying task if a sudden rush of wings is also associated with orders to "drop," and it is well to confirm the natural attitude on point, which will generally be beautiful, before running a risk of the young dog learning to confuse the point with the order to drop to wing.

The rush in, on the rise of game, is better first checked by the hand upon the collar, or on the cord, if one is used.

There is no use in calling "To-ho" to a pointing dog, or in using any words of caution. A broken dog requires no caution, and a partly broken or unbroken one is to be taught to rely upon his nose, and not on the breaker's voice, for his knowledge of when he should point. If the breaker knows best, where is the use of the dog? If the latter points or draws and then moves on, let him do it; it is educational, and one mistake may prevent a hundred; but if you "to-ho" a false point you are making a bad dog by it, and if you "to-ho" when there is game you are teaching the dog that you are going to tell him when to point, and that you certainly cannot judge of by the dog's manner if he does not know himself.

One of the principal things to teach is quartering, and this is often the natural outcome of walking directly up wind with your pupil. It is generally instinctive to the well-bred dog to cross the wind to and fro. But this natural instinct will be unhinged by any change of direction, so that a breaker who started his puppy in different and changing methods, in regard to the wind, would find him ranging, but not quartering, and would observe the puppy at the end of a cast as likely to turn down wind as up. For this reason, until a confirmed range has been established by walking into the wind, with the puppy beating from side to side of his breaker, no other method of beating a field should be attempted. Even with the precaution of always

walking into the wind, the puppy is not unlikely to turn down wind at one end or the other of his cast. That is a bad fault in itself, and bespeaks flighty disposition, and a bad nose besides. There is always scent of kinds, we may suppose, up wind of the puppy, which ought to turn his investigating nose into the wind instead of the other way, as so often happens. The breaker may be troubled to correct this habit, but, as it is partly owing to the dog's love of his breaker that he forgets the game and turns back, it can be cured by making the puppy more fond of finding game, and by tiring him, until he has to think of the nearest way. But as for other reasons tiring a puppy in the breaking season is bad, when no game is being shot, the trouble can be overcome by the breaker walking near the hedge on the side of the field the pupil turns the wrong way, and then, by the teacher making haste as the puppy approaches that side, he will be automatically turned the right way. Strangely, most puppies turn wrong at one end and not at the other. If they turn wrong at both ends, they are probably hopeless fools that are not worth breaking.

A want of good "backing" may be very common from many different causes. It generally comes from an absence of interest in the point of another dog, and consequently is more noticed in spring breaking than in autumn shooting. If dogs are left to themselves in autumn, they will nearly always back, or run in and take another's point. The latter is objectionable, and may cause flushing by either dog, or by both. But it shows interest in the point, and that is what the breaker has to work upon. In the spring breaking not infrequently a puppy will go half a mile round in order to avoid being obliged to see and back a point. That is because nothing of excitement ever comes of a back before the shooting season, and in order to make a perfect backer of a dog of this character (one that is obviously plucky and no fool) he must have his interest created in the other's point. This is very easy to accomplish. One of the chief causes of bad backing is, naturally, false pointing. Like the man who is always crying "Wolf!" the imaginative dog is not believed by his

fellows, and when pointing dogs are made to back up false points they perform the operation as an act of unwilling obedience, and do not assume those attitudes that are so pleasing in the willing dog. It is therefore quite impossible to have good backing in a brace of dogs, if one, or both, false point. But there is a way in which a useless false pointer (and they all are useless) can be made to give a good lesson in backing and one not easily forgotten, that should not be often, if at all, repeated. It is a trick on the dog to be educated, and as such must not be found out, otherwise its virtue will be gone.

The plan is to get a wing-clipped partridge and to fasten to its wing a leather strap, and to this latter a string of 20 yards length with a peg at its end, around which the string can be wound. All together can be put into a cartridge bag, for choice one of waterproofed canvas, because it is not certain whether, in any other sort, the dog will discover what is being carried on the shoulder of his trainer, and it is important he should not discover. Then it is necessary to hunt the prospective backer with the false pointer. The latter will soon get a point, which the puppy will ignore or investigate. In either case, wait until the pupil has done the field and comes back; he will then again see the false point, and before he gets down wind of it he must be dropped by hand. He is by this time "cock sure" his companion is pointing nothing; but in his absence you have unrolled the string from your partridge and put the peg in the ground at a place up wind of the pointing dog, but down wind of the spot where you intend to drop the pupil. You have taken the partridge out of its bag, and, having placed its head under its wing, you have given it two or three swings round, so as to make it giddy. Then you have placed it on the ground lying on that wing under which is its head, and there you have left it. It will lie quite still for a quarter of an hour, if need be. Having gone back to the peg, which must be between the partridge and your young dog for obvious reasons, you give the string a snatch, and up flutters the partridge in full view. The bird will make a racket when he finds himself caught, and will flutter a good deal.

When you are quite sure your dog will not join in the chase you will make as much fuss about catching the bird as possible You will not let the puppy see what you do when you return the bird to the bag, and you will not let the young dog go down wind of the spot on which the partridge has been fluttering. A clever dog will detect what has happened if you do either, and will take no interest afterwards if it should be necessary to repeat the lesson. After this, go straight home with the dogs in couples, and next day have out for the young one a better companion, that will not false point. It is twenty to one that the first point made in the sight of the youngster will be backed with all the vivacity of a point. In this way you will discover that *one* good lesson, properly given with no mistake in it, will do more than a year's drudgery in stopping, scolding, and whipping, when the pupil ought to back.

There are many pointers and setters that will back naturally, but this trait almost implies that they have not as much capacity for finding game as the neighbours that they back up in their points. Indeed, the better the dog is naturally, the greater is the difficulty in persuading him to a spirit of diffidence. For these very good animals the plan has been found the most useful by the author, and a triumph of breaking is to make a perfect backer of a dog so good that he rarely sees a point, because he finds nine-tenths of the game himself. In order to do it, there is a necessity for reducing his own estimation of himself, and luckily this can be done in the manner related without in the smallest degree reducing the finding powers and ranging energy of the most superior dogs.

The Uses of Field Trials for Pointers and Setters

Once in a decade it is possible to see at a field trial a bit of work so good that it is safe to say the doer of it will win the stake—it is safe, although when the opinion is formed the rest of the entries have not been seen at work. It would not be safe to say so when acting as judge, or to act upon any such notion. But the writer has ventured the opinion on several occasions

when others have been judging, and has always been right. The occasions arise only in those rare circumstances when the scent is as good as can be, and the dog does things that only the very best can do in the most favourable circumstances.

Generally it is unsafe to form any opinions except by comparing the work of one dog with that of another at the same time and place. That is what field trials enable; and it does not follow that when only moderate work is done at them that the doers are only ordinary. Field trials are often held in conditions of scent and weather when the wise shooter would go home. The competitors at these meetings are always picked dogs at home, and have generally beaten "good trial horses" before they show in public. But when shooters go to a trial and unfavourably compare what they see there to experience at home, they may be right, but whenever this comparison has given them confidence enough to enter dogs the latter have invariably been disgraced, unless they happened to be of field trial winning blood. This really answers the question as to what use these institutions are.

On the other hand, it is by no means the most experienced field trial men who have the best chance of victory, provided the canine blood is the same for all competitors.

What natural selection and the survival of the fittest has done for the fox and other scent-hunting animals, field trial selection has done for pointers and setters since the first public trial was held in 1865. It is not contended that working dogs have improved over the whole of this period, but the vast superiority of the field trial breeds over others shows what all would have declined to if it had not been for the institutions that annually indicate the best.

But during the last half-dozen years there has been a general, and it is said unaccountable, lack of good brace work at the field trials. The author has satisfied himself of the reason of this strange lack of the highest exhibition of breaking at a time when the dogs are higher broken and more credit is given for breaking than ever before. This appears paradoxical, but the fact is that the premium on high breaking has led to the choice

of dogs as sires and dams that are easy to break, and this again to the discounting of courage. Some worthy usurper, who became a rightful monarch, is said to have watched a spider attempt for nine times to fasten his web upon a coveted spot and succeed in the end. To hunt a brace of dogs properly, it is necessary to have material as persevering as the only spider in history. What is required is that your dogs should find all the game. In order that this should be done, they must beat all the ground, and there is always one corner in a field that nature induces the dogs to leave behind. The corner to right or left of the spot at which the dogs are started is sure to be slightly down wind of the starting-place. The natural tendency is to investigate up wind, and it may be necessary for a breaker to start his dogs ten or twenty times, and to call them back as often, before he can make them understand that they are to "sink the wind," are to drop back, as it were, behind it, and do the usually neglected corner before pressing forward and investigating the scent of game that is probably all the time coming from up wind of them. But it is only the very highest-couraged dogs that can be expected to give cheerful obedience during the constant interference that the teaching of this useful lesson involves. The point the author wishes to make is, that it is necessary to breed for courage and break for docility, and that this is exactly contrary to the breeding for docility that has been done This process, which has been intended to improve breaking, has eliminated the best brace work and the best quartering.

It is not intended to convey the idea that very close quartering is a good feature. The dog should fully occupy his time, and range to the capacity of his nose. To say a dog is going too wide may easily be a great mistake. It is often said that a pointer or setter misses ground, but although some people think that game cannot be missed if ground is beaten in geometric figures, with parallel lines near together, it is often to be observed that those which most obviously leave no ground behind them are just those that leave birds behind them. If we could only smell as dogs do for ten minutes, we should understand them much better. It seems wonderful that these

animals can often detect a pair of little partridges at 150 to 200 yards away, while, even in our own hands, we men cannot smell the birds at all. The variety in the olfactory powers of the dog sinks almost at one end to that of the man, but at the other is entirely beyond his power of thinking. Consequently, when we set any limitation on the width of ranging, or the width between the parallels in the range, we are often asking the dogs to beat the ground twice or three times, which is opposed to the best canine nature. The author is careless how much ground dogs leave behind provided they leave no game behind. Consequently, if they start fairly, so as to get the wind of the near corners, they may be assumed to know the measure of their own noses, and to beat wide or narrow, and with parallel quarterings near, or far apart, as necessary. The wider in both cases the better, provided they leave no game behind. If they commit this fault, they are only wild, and may be assumed to be scamping their work.

It has often happened that the most capable dogs in a stake have run great risks of being thrown out for an appearance of scamping their ground, when, as a matter of fact, they were leaving no game behind, and knew it. This generally happens when the scent is extra good and the dogs know that they can take what are regarded as liberties in their range. But when scent is bad, on hot August days, and the pollen is flying from the heather bloom, these wide rangers will be narrow enough, and will be the only dogs that can find at all. Then those that have had for safety to hunt in narrow parallels in good scent, will be as unable as a man to smell a grouse. It is for this reason that the writer, when judging at a field trial, would never condemn wide or forward ranging unless game was actually proved to be left behind. Quartering is the means to an end, and not the end itself, and it was far more effectively done at field trials years ago, before people began to treat it as an end in itself. Since then brace work has declined, and brace work had always been that in which it was expected, and happened, that the winners should find everything on their ground, and neither flush nor miss anything.

The best natural quarterers (or dogs, for that matter) will invariably be those that alter their methods to suit the occasion. When game is scarce, they will hunt wide, because, in the absence of the scent of game pervading the atmosphere, they can detect the presence of the game at far greater distances than when the scent is everywhere.

They will hunt wide also in good scent.

Conversely, in bad scent they will hunt closely, and when birds are plentiful, or scattered and lying close, they will do so also, and to the author this variation of beat to suit the occasion is by far the greatest proof of nose and sense.

Everybody likes to see a dog draw nicely and sharply up a good distance, and point, knowing precisely where the game is; but these appearances are often deceptive. Nobody knows how far the birds have run, or how much of the draw was due to the foot scent and how little to the body scent. These appearances of good nose have to be taken in conjunction with the manner of beating the ground, before a just estimate of the olfactory powers can be quickly formed. This is made all the more difficult, because a dog of poor courage will generally draw to game as soon as he detects foot scents, whereas the highest-couraged and best quarterers will often gallop over those scents, recognising but scouting the temptation, and will only draw up to body scent.

The difference between foot and body scents is not very well understood by anyone except the dog, and not always by him. Very much nonsense has been written on the subject. The author has noticed comments in the Press showing that the writers believed the foot scent to be an emanation from the feet in contact with the ground. The foot scent is the path of scent left by an animal that has moved away. The author has observed it left by a flying grouse, and also by a diving otter. In neither case could the feet have had anything to do with the matter. But that does not help us to know how the dog detects the difference between the volatile matter that comes direct from the game to the dog's nose, and the same exudation that first hangs in the air, upon the water, bubbles up from the water, clings to

vegetation, or to earth, before it reaches the dog's nose. It is obviously not a question of strength of scent, for a dog having missed a brace of close-crouched partridges will instantly find the spot they rose from after they have gone, proving that, often enough, the foot scent is very much the stronger.

The author has no opinion how it is that some dogs detect the difference between foot and body scent instantly, and others cannot do it. It cannot be that one is more the breath of the hunted animal than the other, because probably the otter evolves no scent except breath when under water, and his line is as huntable to the swimming pack as that of the land quarry to the running hounds. Possibly the actual heat of the volatile exudation may have something to say to the question. Whatever the difference consists of, it is only some dogs that instantly recognise it. These may or may not be animals able to detect a scent a long way off. No great wonder should be occasioned by the inability to be certain: how often do human beings recognise a picture, or a taste, without being able to give either a name?

No attempt will be made to prove what canine-detected scent is, except to this extent. It must be something that our own olfactory nerves work above, or below. Just as there are noises we cannot hear and colours we cannot see, so there are doubtless scents of great power that we nevertheless cannot detect even slightly. A dog will sometimes find and appear to locate correctly a partridge, or rather a pair of them, at 200 yards. We may take those birds in hand and put them to our noses, and even then we cannot detect the faintest scent of any kind. Scent is supposed to spread as the square of the distance, so that 600 feet squared would represent the difference in degree of the scent of the bird in hand and that of the bird 600 feet away. That is to say, one would be 360,000 times as strong as the other, and we cannot detect the strong, whereas the dog finds the weaker one. Surely this is enough to show that it is no question of degree at all, but of something else. Possibly the strong scent of deer and fox that we often do detect is misleading us into the belief that we can sometimes smell what hounds run

by. On the other hand, the author has noticed that when he can smell a fox strongest hounds cannot smell him at all, and consequently there is more confirmation that what the canine race hunts by the human nose cannot always detect in any degree whatever.

It has often been affirmed that game birds lose their scent during incubation, and there is no doubt they lose a good deal of it. Hares and vixens heavy with young are said to have a similar protection from their enemies. But in all cases there is scent, only it is different, and not easily recognised by the dogs kept for hunting it. On the other hand, the nests that the pointer and setter cannot find, the terrier, with a worse nose, often does discover, much to the gamekeeper's grief; and the foxes find great numbers of these nests also, and they do not do it by sight.

A study of the matter is greatly complicated by the fact that game birds give out no scent when crouching, fearful, under a falcon, and this hawk most certainly does not rely upon his nose to help him discover his prey. To understand why the power of retaining the scent should have been evolved, by the survival of the fittest, it is necessary to go back to the wilderness stage of our islands. Probably the first gamekeeper's duties were performed by the slayers of wolves, at any rate in historic times, and we have no occasion to try and take a peep at the cave bear in his British den. The country was much more wooded than it is now, and it is clear that those falcons that only kill in the air would go hungry in woodlands had it not been for the earth-crawling vermin that flushed game for them.

The falconers are now proud of teaching a hawk to "wait on" in the air while a pointer is at work, but if falcons ever hunted in a brushwood country in a state of nature, that is exactly what they would have had to do for their friends the wolves, since they could not flush for themselves, and could not kill until a flush had occurred. It is consequently quite likely that waiting on is a latent instinct in the long-winged falcons, and equally, therefore, retaining the scent was a protection against beast and bird alike.

It is a confirmation of this theory, that the birds that in incubation secure safety by watchfulness, such as the lapwings, retain their scent neither in incubation nor at any other time, but exude it while they are hatching.

The Purchase of Pointers and Setters

Most people have to buy their dogs for the moors, or to hire them. During June and July large numbers are annually sent up to Aldridge's, in St. Martin's Lane. There are a very few general rules which may save a buyer from disappointment.

In nearly all cases the vendors offer to show dogs on game before the sales. It is obviously the best way to go, or send, and have them viewed upon game. The first question always to be asked about young dogs is whether they are gun-shy, and in a trial when no game is being shot it is wise to use the gun, but not fair to use it over much. A dog that has been used to having a shot or two fired over it during an hour's breaking is not necessarily ready to undergo the bewildering experience of a dozen discharges in close proximity and in quick succession when no intention is obvious. Even on the moors, on the 12th of August, the use of the gun should be tempered with discretion, whether the puppies are inclined to be nervous or not. Besides, this is obvious wisdom from another point of view. Your puppy will do as much work as an equally well-made old dog if you "nurse" him; but if, on the contrary, you allow him to run himself out at the first start, he will soon do it, and will not "come" again that day.

Probably the best way is to make a rule, for the few early days, always to take every puppy up after the first find and killing of grouse. Allow him to point dead and make a fuss over the birds killed, but then have him led away 300 yards behind the firing line, where every shot heard will add to his anxiety to make more acquaintance with the gun, provided your dog-boy knows how not to be severe. In an hour, probably, the young dog will be made for life by this treatment; but, as one

can never tell, it is safest to proceed thus for a few days, and meantime the puppy may have fresh short runs at intervals of an hour or two. This refers to highly broken puppies, and not to the wild, sport-spoiling sort. The former are never so good as when they have the keen edge on; the latter are never worse than with it on. Such dogs are too wild to be of use all the morning, and too tired all the afternoon, so that the points one has to make sure of in purchasing pointers and setters are—

Absence of gun-shyness.

Steady pointing.

Freedom from chase.

Dropping to wing, gun, and hand.

A fair amount of ability to go, with a prospect of staying when in working condition.

A good nose.

Answering to whistle.

With these qualities good sport will be assured, although the most particular will require in addition good backing. It is the quality most often absent in good puppies, and luckily can most easily be dispensed with. There are hundreds of shooters over dogs who never saw good backing, as most people are satisfied when the dog behind takes up an attitude of steadiness, and they do not ask unpleasant questions as to its nature. In practice a double point is often as good as a back, and it is not difficult to understand how some people may get to prefer that the dog behind is on the spot. For one thing, he is then safe from doing undetected damage, and is ready to assist in roding out close-lying birds as soon as his companion needs help.

Between this and the most striking field trial backing there is a happy middle course, which used to be considered the most perfect, and is so now, but it would be unfair to expect it when strange dogs meet each other at field trials. It consists in a perfect sympathy with the pointing dog, so that the animal which has not got the scent feels it through the "thought reading" of his companion. One cannot suppose there is

conscious imitation of movement, yet so perfect has occasionally been the imitation of the movements of the advance dog by the one behind, that, step for step, stop for stop, crouch for crouch, and drop for drop, the one has copied the every action of the other, as if the pointing dog's nervous system was affecting the muscles of both inch by inch. Not only has this been so, but the hesitation of a lifted fore leg has been reflected by the image behind. This kind of thing generally arises from two dogs being constantly used together, being particularly equal, and also being frequently tired in their work, so as to make it habitual for one to be glad when the other has found game. At field trials, if the competing dog is not sorry to see a competitor's point, his master probably is (it may mean £100), and the feelings of the man are apt to be reflected in the dog.

By "nursing" a team of dogs in the way mentioned above, it is wonderful how few will keep a pair of guns going day after day. If dogs are run to a standstill one day, they will want a day's rest the next, and the fewer dogs a shooter can get through the grouse season with, the better and more experienced each canine servant becomes. Consequently, economy and excellence go hand in hand.

The better to further both designs, the buyer should have some regard for make and shape, and a minor regard for size. The dog-show ideals will not assist much. The principal wants of a working dog, to enable him to go on long, and day after day, are good shoulders. The nearer the tops are together the better—indeed, in imitation of the shape of a good hunter's withers (that is, narrowing as they approach the top of the back). Powerful muscles in the hind legs, especially in the second thighs, big hocks set low down and well bent stifle joints, but not necessarily well bent hock joints, are all essentials, but only in proportion to the weight to be moved. Big fore legs below the knee and loins the same width from end to end—that is, with no dip horizontally or vertically in the middle—is part of the formation essential to stamina. But, after all, the only point wanted is proportion. With true balance the lighter a dog weighs the better, and yet the bigger he is the

better too. This is only saying that the lighter and stronger he is for his size the better.

If it is impossible to see dogs out before auction days arrive, the safest way is to pick out some owner who sells with a good description, and who is good for powder and shot in the event of a mistake being made. Then the buyer has what amounts to a guarantee, and one that has often been acted upon. But unless the purchase is of well seasoned dogs, that have been the chief helps to some well-known sportsmen, it is always safest to go exclusively for field trial blood.

The chances are that young dogs of this blood will be far better than their owners know, and will come on in a surprising manner after a little shooting over, whereas coarse-bred dogs, that have been shot over a season, will be going back, and in most cases will have probably learnt some bad habits.

Nobody can decide for another how many dogs will do. The men differ even more than the dogs. Alternate instead of consecutive days on the moors will mean half the dogs necessary for every day upon the "hull." In the same way the number may be decreased again by half if the shooting does not start until noon, and a long hour is taken for lunch, and the shooter is back at the lodge by 6 p.m.

Other men will begin shooting at 9 a.m., and will stop work at 6.30 or 7 p.m., which more than doubles the hours. Then the dogs will differ. The average perhaps will not now do more than two hours' fast work during the day. Nothing is much more distressing in sport than a tired man trusting to a weary dog. That kind of thing is not what one pays big grouse rents for, and nothing less than fast work is likely to satisfy in these days.

No shooter of economic mind in regard to canine assistance does well to permit couples to be used on shooting days. They take half a day's work out of some dogs, and a good deal out of all. Pointers and setters ought to be taught to walk at heel without couples, and are all the better for being sent in a cart to the fixture. Every ounce of energy should be conserved, as with a Derby horse. If dogs are really broken, they cannot be

too fresh. Sometimes they are more fond of galloping than finding game, and then the best thing to do is still to start them fresh, but to run them until they are tired. This soon makes them glad of an excuse to find game. On the other hand, some are too fond of pointing, and will follow up any faint scent, leaving ground and birds right and left behind them, because they are too lazy to quarter. They are not nice dogs, but they are best worked very fresh and only for short spurts.

The author has often been asked what is the best way to treat a dog that false points and draws right into the wind as if he had found game, when he only thinks he may have done so. Probably the best way is to walk past him with a good retriever at heel, one on which reliance can be placed to show whether there is game in front or not. This saves you from the necessity of recognising a false point, either by drawing on the dog or calling him off. In either case your notice would do harm, whereas if you take not the smallest notice of such points the dog will soon learn to rely upon himself, if he has any courage at all.

There is, of course, a great demand for field trial breakers. Good men of this sort always get good posts, but sportsmen who have keepers whom they would like to see better handlers of dogs of any kind, would generally gain their ends by sending their men first to look on at field trials, then buying some six-weeks-old puppies of a good sort, in order to let their breakers compete occasionally at these events. It teaches keepers to view dogs in quite a different way, and they cost no more to keep as highly broken than as slovenly unbroken animals.

COL. C. J. COTES' FIELD WINNER PITCHFORD DUKE ON THE RUABON HILLS

COL. C. J. COTES' FIELD WINNER PITCHFORD DUKE ON LORD HOME'S MOORS IN LANARK

THE FAMOUS FIELD TRIAL WINNER SHAMROCK BELONGING TO MR. ARKWRIGHT

MR. W. ARKWRIGHT'S SOLOMON'S SEAL AND SEALING WAX TRYING TO GET UP HIGHER TO FEEL THE SCENT

THE POINTER

IN his beautiful monograph of the pointer, Mr. W. Arkwright, of Sutton Scarsdale, has given to us material and research which settles many things, and enables us to make up our minds with sufficient certainty for our own satisfaction upon many more. That is to say, any of us who take the trouble to refer to Mr. Arkwright's pages will be able to form a judgment for ourselves upon the origin of the breed, as well as upon the tendency of breeders, for the last century. The author does not propose to quote, as he would like to, from those pages. The pointer is only one small item in a general book on shooting, and this is what the author is bidden to write by his publisher.

A great deal was known about the pointer before Mr. Arkwright took pen in hand, and the views about to be expressed are considered opinions after reading that author's work, and passing in mental review the breed as it has been known for the last half-century.

The author became possessed of his first pointer about 1860. It was a gift, and came originally from the kennels of the Lord Derby of that time. It was a coarse dog with a coarse stern, so that if Devonshire men introduced foxhound blood in the seventies they were not responsible for the coarse sterns, or not entirely.

Mr. William Arkwright holds that any foxhound blood is bad; it must therefore have tried him very highly when he discovered that all pointers are the descendants of hounds. Doubtless there is a difference between hounds, and possibly the foxhound is the last kind one would wish a pointer to resemble; but, after all, a hound's business is to catch and kill.

whatever sub-title he may claim, and consequently it follows that pointers were evolved from dogs whose business was to catch and kill. If, therefore, our dogs are sufficiently opposed in instincts to their ancestors, there can only be a sentimental objection to a perceptible external trace of hound. As a matter of fact, half the pointers seen at field trials have *too much* "point," and not one in fifty too little. No doubt it was the tendency for the natural point to increase in every generation that caused the sportsmen of Colonel Thornton's period (about 1800 A.D.) to cross with the foxhound.

The pointer undoubtedly came to this country both from France and Spain. The former was a light made and the latter a heavy dog. They were apparently not related, but both became the ancestors of the modern pointer. With all this chance of cross breeding, our grandfathers do not appear to have been satisfied, and were for ever trying other crosses to improve their breeds. Colonel Thornton had a remarkable dog by a foxhound, and other sportsmen had very celebrated droppers—that is, crosses between pointer and setter. It came to be the fashion to think that these crosses never perpetuated their own merit in the next generation, and they got a bad name in consequence. Had this not been the case, probably no pure bred setters or pointers would have been handed down to us, and perhaps there were none so handed on. It seems to the author that there must have been ancestral reasons of the most imperative kind for the differences as found in noted strains of pointers in the middle of the nineteenth century.

My experience has shown that cross breeding does not of necessity imply equal degrees of cross blood in the offspring. It never implies half and half; and although it generally does mean cross breeding to some slight extent, that slight cross can be eradicated in future generations by selection. Of all means of selection by externals for blood, colour and coat are the most trustworthy. It is exceedingly strange that dogs of the same ancestry but of different colours can be bred together for twenty generations and never blend

LEADER

DESPATCH

LARGO

THREE OF MR. ARKWRIGHT'S WHOLE-COLOURED POINTERS—
LEADER, DESPATCH, AND LARGO

THE SPANISH POINTER

FROM A PAINTING BY G. STUBBS

colours in the offspring. This blending of colour happens but very rarely, and as colour is more or less indicative of blood, almost certainly for one, so it remains through many, generations. In discussing setters the author has had occasion to relate more fully his own experience of this remarkable tenacity of colour, in spite of colour crossing, and also to note the curious fact that along with colour is inherited much of the character that originally belonged to or accompanied it.

The writer would therefore divide pointers in his own mind into three great modern families, each of which has both the Spanish and French pointer as a base. These branches are:—

1. Those that have setter indications, including the majority of lemon-and-white ones, and those of the "ticked" varieties.
2. Those which resemble the greyhound in formation and in fineness of stern, and have a tendency to have feet like the greyhound. They are often whole-coloured like it too.
3. Those which seem to trace to the foxhound, by reason of their "cat" feet, thick coats, and coarse sterns.

Whether the origins suggested are correct or not, there is a very great difference between breeds at present, and some internal qualities seem to be most often found with certain colours and formations. For instance, the "dish-face" characteristic of the setter is most often found in the lemon-and-white pointer. The "Roman" profile characteristic of the hound is most often found in the liver-and-white sort, and the very fine stern and hare feet, the stern often with a tendency to curl up, is found most often in the whole-coloured pointers.

Again, a tucked-up, racing appearance is generally seen in old pictures and present-day dogs associated with the whole or self-coloured pointers; a high or foxhound carriage of stern occurs with the liver-and-white; and long backs are most

often seen in lemon-and-white specimens. The long backs have been partly bred out of the setter, but he formerly shared them with his collateral relation the spaniel, and even now he is a longer dog than the pointer.

Of all these races the greyhound type is the most perfectly formed in body. The dish-faced lemon-and-white kind appear to be the most affectionate (spaniel-like); and the hardest workers, with the hardest constitutions, the author believes to be the liver-and-white sort. The principal colours of the original French and Spanish pointers were probably black-and-white and liver-and-white, some of them having very little white, so that it is not suggested that the supposed crossing was alone responsible for the colour.

The first time a tendency to "grey" was noticed by the author was in the "ticked" pointer Romp, run at a field trial about 1870 in Devonshire by Mr. Brackenbury. The pedigree of this bitch was, to say the least, defective, and the "belton" markings, as also the whole conformation of the animal, was suggestive of the setter. Romp's Baby, a descendant of the above Romp and similar in markings, was also setter-like in build, in feet, and in work. The aforesaid Romp laid the foundation for the best race of pointers in America, but unfortunately most of the blood has been lost to this country. The profuse ticked markings are rarely seen, but when they do appear it is easy to trace the character of the Romp family.

Amongst all the pointers and setters the writer has seen he would be puzzled to name the best, but he can say without the smallest hesitation that Romp's Baby was by far the best small one.

Sir Richard Garth's Drake was the best pointer that ever contested a field trial, in the author's judgment. He was a large dog of the liver-and-white variety described above, but with a little of the body formation of the whole-coloured variety, and a good deal of the dish-face of the lemon-and-white ones. The author remembers this dog's maternal grandsire, Newton's Ranger, a very big animal of great refine-

ment, and with wonderful length of head and neck. There is no doubt Drake got his quality from here, and for the rest he was descended from the kennels of Lords Sefton, Lichfield, Derby, Mr. Cornwall Leigh, and Mr. Edge, and the Stud Book gives him a Spanish pointer in tail-male. He was a revolution and a revelation in field work, proving for the first time that the utmost care was to be had with racing speed and with the greatest boldness. Perhaps it is wrong to say "was to be had," for all these qualities in a pointer have never quite been collected in one individual since. Only one son of Drake that the writer saw had any pretence to his sire's speed, and that one appeared to have *no nose* whatever; whereas Drake was as phenomenal for nose as for care, speed, and boldness. If there was any foxhound in this fine liver-and-white dog, it must have been very cleverly bred out. On the other hand, his small counterpart Romp, of the blue mottled colour with tan on her legs, might have suggested hound, but not foxhound, as much as setter, by her colour.

On the evidence, the author is inclined to suggest that these two wonderful animals owe their vigour and unique qualities to a not very remote cross of blood. We have it that Drake's paternal grandsire was a Spanish pointer, and we have Romp's appearance and colour to declare her no pure bred pointer.

The next best performers of the period, but with a great gap between, were Mr. Lloyd Price's Belle, bred by Lord Henry Bentinck, but without pedigree given, and Mr. Sam Price's Bang. The author is not certain whether the general opinion is that Mr. Sam Price went to the foxhound, and that Bang owed his substance and character to the cross, but he was certainly different in type from those other Devonshire pointers, Sancho and Chang, that won on the show bench about the same period, and were entirely pointer-like.

Without in any way insisting upon the origins of the different types and colours above described, there is no doubt that some difference of ancestry at a remote or recent period has been responsible for the characteristics. Consequently, for practical

purposes and for breeding, the specimens most marked with the characteristics peculiar to each kind may be treated as distinct strains of blood, although it may not be known what that blood is. To make the author's position more clear, he would say that if a lemon-and-white and a whole-black pointer came in the same litter they would probably be related in blood, as they certainly would be on paper; but the blood relationship might be very slight indeed, for one would be, as it is now expressed, a "brother" of some remote black ancestor, and the other a "brother" of some remote lemon-and-white ancestor. But this is not *wholly* true; because in breeding together brothers and sisters both of one colour, other colours will very occasionally come in the offspring. The influence of sire and dam is shown to be much less than was previously thought possible, but it is not shown to be absent, in spite of the cell and germ theory.

It is obvious that, in starting to keep pointers, a prospective breeder must settle on one or other of the three existing types, and it is necessary for such a beginner to know that he may cross them one with the other with great constitutional advantage, without much fear of blending type or blood, provided he selects for type and character by means of colour. For instance, he may cross a black pointer with a lemon-and-white or liver-and-white, and repeat this in every generation, and yet the puppies that come black will be of one type, and those that come lemon-and-white will be of the other. The cases of blending will be very rare indeed, and can easily be discarded.

The late Joseph Lang, the gun-maker, had a breed of lemon-and-white pointers, from which those of the late Mr. Whitehouse were descended, and that gentleman's Priam and Mr. W. Arkwright's Shamrock, with a space of thirty-five years between them, might have been litter brothers for appearance and work. The latter is the best lemon-and-white pointer seen out in quite recent years, and the former was probably the best of his period. Sir Watkin Williams Wynn has a strain of lemon-and-white pointers in which black-and-white and liver-and-white often come, and in this kennel there is a nearer approach to a blend

JUNO, A FAWN-COLOURED POINTER, BRED BY KING GEORGE IV. IT IS SUGGESTIVE OF THE GREYHOUND LIKE MANY MODERN WHOLE-COLOURED POINTERS

AN EARLY NINETEENTH CENTURY PICTURE OF THE WOODCOTE POINTERS, THE PROPERTY OF COL. C. J. COTES. HIS FIELD TRIAL WINNERS PITCHFORD DRUCE AND PITCHFORD DUKE ARE DECENDED FROM HIS FATHER'S WOODCOTE POINTERS

of type in the three colours than has been remarked by the author elsewhere.

Mr. A. E. Butter, of Faskally, had a very fine kennel of liver-and-white pointers, mostly derived from a strain kept up in Shropshire and the neighbourhood. These dogs had all the best strains of liver-and-white blood in their pedigrees, and they were as successful at field trials as, and much resembled, Mr. Sam Price's Bang and Mike. Faskally Bragg and Syke of Bromfield were most striking workers, entirely of the liver-and-white type; but good as they were in the field, it was difficult to see how Bragg became a show Champion, with a very heavy shoulder, great throat like a hound, and the same suggestion behind. But he became a capital stud dog, and in Melksham Bragg probably became the sire of his own superior in work as well as in appearance. But a better than either was Syke of Bromfield. The best of this type is now in the kennel of Colonel C. J. Cotes of Pitchford, whose Pitchford Ranger and Pitchford Duke are in every way admirable specimens of this type of pointer. The latter's dam, Pitchford Druce, approaches the dish-faced, fine-sterned type, and very few better have won at field trials in recent years. Colonel Cotes tells the author that this bitch traces back to his father's old breed, kept for a century at Woodcote, where there were constant interchanges of blood with Sir Thomas Boughey's sort, only recently dispersed. Mr. Elias Bishop has been very successful with his family of pointers called the Pedros, and these again are of the liver-and-white type, but with a tendency to the dish-faces of the lemon-and-white dogs, and not as coarse in the sterns as some of the more pronounced liver-and-white type.

Mr. Arkwright has the best black pointers the author has seen. Their bodies are distinctly greyhoundy in form, but not their heads. The last-mentioned fact does not preclude the possibility of a remote cross of greyhound, as colour is a truer indication of blood, although not of paper pedigree, than is head formation. By "paper pedigree" no suggestion of false testimony is intended, but reference is made to the recently ascertained facts that two of a litter may be widely different in root

origin. Some of the self-coloured pointers of Mr. Arkwright's kennel have been fawn colour, a well-known greyhound shade. It may be that these are throwbacks to the greyhound blood. But that would not be the author's explanation. As observed above, a blend of colour very seldom comes by crossing one colour with another, when both are pure bred and neither have the blend of colour in their ancestry. But a little more often than a blend of colour comes a heritage of the colour of one parent and the markings of the other. So that when Mr. Arkwright has crossed a lemon-and-white with a black, there would be nothing wonderful for an occasional puppy to come with the markings of the black parent, but of the colour of lemon, in this case called fawn, which is the same colour. On the other hand, a blend of colour and markings would require the offspring to be whole-coloured and liver-coloured. That liver colour is occasionally obtained from blending the red or sandy with the black, the author has proved beyond question in his own experience where neither parent inherited the colour, but it seems to require a violent out-cross to give rise to it, for black-and-white and lemon-and-white dogs of the same family may sometimes be bred together for many generations without giving rise to this blend of colour.

Mr. Pilkington at one time had as good liver-and-white pointers as anyone who was then running dogs in public. His Garnet was very much of a pointer; and Nicholson, who engineered him to victory, has continued to win at field trials with some of the breed; and another Salopian keeper who has been a most successful breeder is Mawson, who bred Faskally Bragg and Syke of Bromfield.

As the sire of Mr. A. T. Williams' Rose of Gerwn, the stud dog Lurgan Loyalty cannot be passed over. Rose was full of vitality and pointer instinct, but far from handsome, and very small. Lurgan himself was a small dog and very well made, but he had rather a terrier-like head. His daughter, Coronation, although long held to be the best pointer on the show bench, was obviously too shelly for hard work, and can only be mentioned here to show that exhibition points

COL. C. J. COTES' CHAMPION FIELD TRIAL PITCHFORD RANGER ON LORD HOME'S LANARK MOORS

COL. C. J. COTES' CHAMPION FIELD TRIAL PITCHFORD RANGER ON THE RUABON HILLS

FIELD TRIAL WINNER PITCHFORD BEAUTY ON THE RUABON HILLS

FIELD TRIAL WINNER PITCHFORD BANG

CAPTAIN STIRLING'S BRAG OF KEIR (FIELD TRIAL WINNER)

need have no relationship to the essentials for a working dog.

In these days of wild grouse and partridges, all the fine qualities and beauties of a pointer are absolutely useless unless the individual is endowed with the very best of olfactory powers.

The length of a pointer's "nose" is determined by the day; but the author is inclined to believe that the relative distances at which any two dogs can find game always bear the same proportions to each other. One on a fair scenting day may find game at 100 yards and another at 10 yards; another day, or in other circumstances, the same two noses will be effective at 50 yards and 5 yards respectively. Even this great difference does not convey all there is between the best and the worst. Such differences have been observed even at field trials, where each sportsman only enters his very best. But behind those is the rest of the kennel, and every breeder of dogs must occasionally breed the *very bad indeed.* The author has, at any rate, sometimes seen a dog with a total inability to find game although both its parents had exceptional olfactory powers. What the explanation may be cannot be suggested, but there may be a kinship between the organs of sight, hearing, and smell, and as there are some colours and sounds the human eye and ear cannot detect, and some scents that the human nose cannot recognise and the dog's nose can, it seems possible that even a dog's nose may occasionally be found either below or above the range of sensitiveness usual in the canine. But "nose" is the only quality in the dog that does not seem to be within the control of the skilled breeder, who may expect success within limits from proper selections of parental form, pace, stamina, and heart, but in inheritance of olfactory powers must expect the unexpected occasionally, but not often.

Having obtained pure bred pointers, it is well to remember that nose is even more important than enormous speed. A dog travelling 50 while another went 100 yards would be a crawler; but, as has been said above, nose differs by much more. When, therefore, we consider the comparative merits of

two dogs, we should not regard space in lineal measure but in square measure. Thus, if we take the slow speed at 50 yards and the long nose at 100 yards and multiply them together, we get 5000 square yards as the capacity of the slow dog for hunting ground, while that of the fast dog may be 100 yards of speed multiplied by 10 yards of nose, or only 1000 square yards of covering capacity as against 5000 of the slow dog.

This is not intended to be an excuse for slow dogs, for it usually happens that the very fast ones are also the best for nose; but it is meant to imply that a dog should not be exerting his whole energy in galloping, because if he is he will not be thinking about game-finding, and will not find. A pointer must do the thing easily, and go well within his powers. He must not couple and uncouple like a greyhound. He must not gallop like a little race-horse, although he may, if he can, gallop like one of those smashers that are said to "win in a canter," which means that they are not exerting themselves. Pointers with lively stern action may be taken always to be hunting well within their powers. Some of those that have no stern action would have it if they were not over-exerting themselves in galloping, but this is not invariable; and some of the fastest and best pointers have not had stern action. For instance, Drake had not.

About 1872, Mr. Thomas Statter, of Stand Hall, near Manchester, had as good pointers as anyone and the best setters. His pointers were of Lord Derby's liver-and-white strain, and Major, Manton, Rex, and Viscount were some of his best. Major appears at no time to have been under much control, but he was a dog of great natural capacity, and his blood told in future canine generations, whereas that of his better trained victors died out. The late Mr. A. P. Heywood Lonsdale had a fine strain of this kind of pointer blood, and at the moment of writing one of the best, if not the actual best pointer in America is descended from dogs exported direct from the Ightfield kennel, which is now particularly strong in setters, but has not many pointers. For the late Mr. Lonsdale, and afterwards for his son, Captain H. Heywood Lonsdale, the late W. Brailsford managed a fine kennel of dogs, as he had

previously for the late Duke of Westminster, and before that for Lord Lichfield. His pointers, wherever he went, were of the liver-and-white sort, and were practically of the same strains as those mentioned in Drake's pedigree. Indeed, it is probable that Brailsford and some other keepers did as much as the dogs' owners to keep up this race of pointers, which is now stronger in Salop than anywhere. William Brailsford, moreover, founded the National Field Trials during the time he was managing Lord Lichfield's kennel, in 1866—that is, one year after the first start of field trials in Bedfordshire.

To start breeding pointers of the right sort is as easy as to continue breeding the wrong. There are dogs constantly going to auction whose ancestors have won field trials for ten to thirteen generations. This is a guarantee to a certain extent that puppies will be worth something to shoot over. It is a great assistance to the breeder, who, having the blood, can confine his powers of selection to the choice for external form, which is a great simplification. A pedigree as long as one's arm is absolutely useless as a mere record of names, but with field trial victors in every generation it is nearly all the help that a breeder can desire. If to these were added good photographs of each generation, it would make breeding almost a certainty.

The records of bench show wins by no means take the place of photographs, for the variation of victorious types is as great as that of the selection of judges. This was always so, but of late years dogs have been bred for show without regard to their business in life; so that many exhibition pointers are only nominally of that breed, and instead of shows assisting pointer breeders they are so managed as to *preclude* competition by field trial dogs. This might be altered by the adoption by the Stud Book, or a new one, of the principles upon which the Foxhound Stud Book is managed by the Masters of Foxhounds Association. That is, by only admitting hounds bred from sire and dam entered in a recognised pack. The same principle would be satisfactorily adopted if only dogs bred from field trial winning parents, or winners themselves, were admitted to the Stud Book, or to pointer classes at shows, when

both the book and the exhibition would become of real use. A similar principle is involved at the King's Premium Show of thorough-bred horses, where the performances on the Turf of the competitors are placed before the judges; and in 1906 the latter have recommended that they should be allowed to consider pedigrees also in making their awards.

Formation, which indicates power to work, is of as much importance in a well-bred dog as pedigree, which should indicate will to work. But in a badly bred dog formation is of no importance, but, by the Kennel Club management of dog shows and Stud Book, formation is treated as of the first importance, and true working blood as of no importance whatever. The author ventures to predict an alteration, or, failing that, a time when all the owners of sporting dogs of all kinds will ignore the Kennel Club as completely as the Masters of Hounds Association and the Governing Body of Coursing always have.

Mr. B. J. Warwick, who has Compton Pride, a liver-and-white pointer with the distinction of winning the Champion Field Trial Stake at Shrewsbury twice, is a member of the Kennel Club, and Mr. Sidney Turner, its Chairman, has proposed at meeting only to give championship Kennel Club certificates to field trial winners; but the sporting influence is weak in the Club, and nothing has come of the Chairman's proposition, which by itself would not go half far enough to redeem the sporting character of the Kennel Club, or to put under ground all show dogs that are nominally sporting but cannot work. Nothing less drastic will be of the smallest use in improving the shows for the true working breeds. The author is speaking only of pointers and setters here, of which breeds large numbers could qualify. The same treatment for spaniels and retrievers would naturally be deferred until field trials for those breeds had produced more winners and more dogs bred from winners in the field.

The following contrast will assist in showing the care necessary in the choice of blood; for no breed differs more between its individuals than the pointers.

About 1865 the writer had a small black-and-white dog of

the race, which was nearly the first dog he broke. But he was almost ashamed to say that he did break it; for, with the exception of holding up a hand occasionally, there was nothing to be done, and yet this dog had all the desire to quest for game that could be wished. It taught itself to point, to range, to back, and almost to drop to wing, and never desired to chase a hare. Shortly before this, being then very young, the author became impressed with the necessity of possessing more pointers, and by means of advertisement procured a bitch to breed from. She had a pedigree of enormous proportions and pretence, but a list of names has no meaning unless attached to those names are records of the performances of the animals that once possessed them. However, not everybody was aware of that at a period, unlike the present, when a pointer generally meant a dog kept to shoot over, and the purchase looked like a pointer—at any rate, it was liver-and-white. She bred four puppies, which were very foolishly exhibited at the Birmingham Show. More foolish still it was to give them a run behind a horse. They looked like following, and if they would not, the author believed he could follow them. They soon put him to the test, for they went straight away in a pack after nothing whatever, until they came to a field in which sheep were penned on turnips. Then they all together went for the sheep, and for the first time *divided.* It is all very well to be huntsman, but difficult to double the parts and be whipper-in as well, especially when the pack divides. Besides, one hunting thong does not go far in tying up four dogs to hurdles; more especially when they bite the thong in two while another is being ridden down. There was much cry and not a little wool; but although they went for the throats, they were attacking Lincoln or Leicester sheep, and the long wool helped to save some of the mutton. These dogs had no natural quest, although they were wild for a race and for blood. Had they had collars on when they went for the sheep, each could have been rendered harmless upon being caught by having one fore foot slipped through the collar, but the author did not learn the trick until many years later.

ENGLISH SETTERS

FOR reasons that it is difficult to fully explain, English setters have been subjected to more fluctuations in merit than any other breed. The last decadence undoubtedly set in when the show and field trial sorts first became distinct breeds. The show dogs lost the assurance of constitution which work in the field guarantees, and the field trial dogs lost the breeder's care for external form, which as show dogs their ancestors had received. Moreover, they had no equivalent in England in the form of stamina tests at field trials, and the principal breeders have so many dogs that stamina is of little importance in practice to them, however necessary it is to the maintenance of the vitality of a race of thorough-breds.

There is evidence of black-white-and-tan setters in a Flemish picture of A. Dürer, but in England the earliest *clear* evidence makes the English setter of 1726, or thereabouts, either red-and-white or black-and-tan. From the breeding together of these two colours may now be produced whole-coloured red and whole-coloured black, black-and-white, and black-white-and-tan dogs, and possibly also their various mixtures, such as "ticked" dogs of either colour, but this is doubtful. There have been several strains of liver-and-white setters, quite pure bred as far as anyone knew, but bearing traces of water spaniel character, so that it is probable they were originated by this cross at some remote period. Probably it is possible to originate liver-and-white by crossing black-and-white on lemon-and-white; but if that is so, this is an original mixture of colouring that is exceedingly unusual, provided there is no reversion to a liver-and-white ancestor. It is unusual for this blend to

occur, because a race of setters has been bred for many years in which more than 99 per cent. of the offspring came one of three colours—namely, black-and-white ticked, lemon-and-white ticked, and black-white-and-tan with very few ticks and large patches of colour. The other two colours that have shown themselves, each less than 1 per cent., have been red and white in large patches—a combination of the markings of one, and the colour of another, ancestral race—and liver-and-white. But it is possible that these two rare kinds are not blends at all, but only reversions to ancestors more than thirty-five years and ten or twelve generations back. Paper pedigrees can trace the colours and the absence of red markings back much farther than this, but the author is only now discussing what he personally remembers. Probably these are not reversions at all, but merely blends of colour and markings. It would possibly be more nearly correct to say that the liver-and-white appears in the race referred to no more often than once in a thousand puppies. If it is a reversion, it shows how very nearly a cross may be bred out; and if it is a blend, it proves that whatever generation of these black-and-white and lemon-and-white setters are crossed together the offspring continues to come of the three original strains of blood, with little mixture, and very seldom a thorough mixture.

All the best English setters in the world are descended from Mr. Hackett's Rake, a descendant of Mr. Burdett's black-and-tan Brougham. Rake begat Mr. Statter's Rhœbe, and also Judy, the dam of the Champion Field Trial dog Ranger. These two, Rhœbe and Ranger, founded two distinct families, which for a very long time were not mixed, and in America are still separate, and the former remains uncrossed with American blood. The Ranger blood was principally kept up by Mr. James Bishop of Wellington, Salop, and by Mr. Elias Bishop also.

The Rhœbe blood came into note when this celebrated brood bitch was crossed with Duke, a dog bred from a Netherby dog, and a Staffordshire bred bitch, belonging to the late Sir Vincent Corbet. Amongst many good offspring, Rhœbe had

one peculiar dog called Dan. He stood over 27 inches at the shoulder, and had more bone than any foxhound. This setter won the Champion Stake at the National Field Trials in 1871. His chief merits were that he was very fast without distressing himself, and his tremendous strength and stride enabled him to go round fast small ones without appearing to be trying, and meantime to flick his stern as only those going within their powers can. Setter breeding was revolutionised when this dog was bred to the best bitches of Mr. Laverack's sort.

Mr. Laverack's dogs in the sixties were known mostly upon the show bench; but what was then less well recognised was that no dogs had done harder work upon the moors for many canine generations. They were said to be in-bred to only two animals on all sides of this pedigree, and to go back seventy years without any cross whatever. It is probable that Mr. Laverack had forgotten what crosses he did make; but in any case he crossed with the black-white-and-tan Gordons of Lord Lovat's kennel, and whether he kept the offspring or not, there was generally a trace of tan about the cheeks of his black-and-white ticked dogs. In any case, his dogs were very much in-bred, until some of them suddenly came liver-and-white in one litter, and red, and black, whole-coloured in another. None of the latter were allowed to mix with the Rhœbe and Duke strain of setters, and indeed these were only crossed with the blood named above, and with that of John Armstrong's Dash II., a son of a Laverack setter dog, and descended from a bitch said to be a sister of that Duke mentioned above. From this limited material in point of numbers, but of three distinct strains of blood, the finest setters of modern times were produced, including many that won principal honours of the show and also of the field trials. In England they took most of the field trials for setters for some years, and in America they took all stakes that were open to both pointers and setters for even longer. To apportion the merit amongst the original three strains would be difficult, but as the setter breeding of the future depends on a proper understanding of that of the past, some few remarks may be of use. First, it has to be admitted

that the Rhœbe blood was as successful when crossed with the Laverack race as when braced up by the cross with Duke. Also that Duke's descendants from other crosses than that of Rhœbe were better than any others, except her own so crossed descendants. Duke and the Laveracks never were directly crossed together, and there is nothing to be had from the pedigree of Kate, the grand-dam of Armstrong's Dash II., because it has been variously given at different times. On the book, then, the merit was due to Rhœbe and Duke in equal proportions, but the book is wrong. The reason for this being said is that the brothers and sisters of Dan, by Duke from Rhœbe, were a poor lot. They were great big 26 inch dogs and 24 inch bitches, and one of them, namely Dick, in appearance with Dan made the most remarkable brace that ever won the stake at the National Trials, and apparently there was not a pin to choose between them, except that Dan was the faster. They hunted out what is now the Waterworks field at Acton Reynold in a style of ranging, pointing, and backing that could not be improved on even in imagination, and the way they had of going down on their elbows, and standing up behind, with their great flags on a line with their backs, and consequently pointing upwards at an angle of 45 degrees, was a revelation in style, just as the pace was, for it was so easily done that they had lots of time to flick their sterns as they went. When they were taken up without a mistake, no others, even without a mistake too, could have been in the running. But Dick was a flat-catcher, wanting in stamina, courage, and in nose, for he was a bad false pointer. Dan was the only one of the litter, as far as they were known to the author, that was a perfectly honest dog, and exhibited no more at a field trial than in private. It is therefore not possible to discredit the Laverack bitches that, when crossed with Dan, again and again produced litters in which there was scarcely any difference between the best and the worst, and in which, when the best died, the worst were good enough to find themselves running against Ranger for the National Championship. But this is not all the evidence in favour of the Laveracks, for, when

heavy dogs of that strain were crossed with the very moderate sisters of Dan, the produce was far better than either the sires or dams. It was only when the three sorts were blended that anything like uniformity, or a distinct breed, appeared, and the offspring were far more true to type, and merit in work, when the tail-male line was to Duke and the tail-female a Laverack, than when the order was reversed. The Stud Book shows the field trial winnings of the sort, and it will always be remembered that once, when the Field Trial Derby was a very big stake, four setter puppies of this breed, belonging to Mr. Llewellin, took the four first places in it that could fall to setters. In other words, they put out all the other setters and then defeated the best pointer. At other times they won the brace stake one day, and one of the brace the single stake the next. Then Count Wind'em and Novel on one occasion took the two championships at Birmingham Show for good looks, and beat the best pointers and setters at the National Trials as well. Count Wind'em was about 25 inches at the shoulder, long and low, and neither hot "muggy" weather in August, nor hillsides of the steepest on which grouse lie, could tire him. One field trial judge of the day who saw the way he did the heather against such dogs as Dash II., and other winners of the time, compared the sight to that of a great racing cutter sailing round a 20-rater. It was all done without an effort, and therein lay the conserved energy that kept on as long as any man could follow.

In America this breed was first called the "Field Trial breed," then "Llewellin setters," and also "The straight-bred sort," by which it is generally known in conversation. At the time of writing (June 1906) the last pure bred one of the race that has run at an English field trial was Mr. Llewellin's Dan Wind'em, bred in the last century. But in America nothing has ever been able to suppress the pure bred ones at the field trials there. When they have not won, their 90 per cent. of pure blood descendants have done so. In 1904 the author was on a visit to America, and, having been requested to help judge their Champion Stake, did so, with the result that one of these pure

MR. HERBERT MITCHELL'S LINGFIELD BERYL, WINNER OF FIRSTS SIX TIMES IN SEVEN FIELD TRIAL OUTINGS IN THE SPRING OF 1906

THE ENGLISH SETTER, BY REINAGLE

With the exception of an ill-drawn hind leg and near fore foot this is the correct formation. The model had the shoulders, head, back and back ribs, rarely seen now except in hard-working dogs.

breds defeated all comers. This dog was called "Mohawk," and in the same kennel was another setter named "Tony Man." The latter had a slight trace of outside blood, but the two were almost identical to look at. Tony Man had just previously beaten Mohawk, and won the stake of the United States Field Trial Club in first-rate style. But the trace of outside blood was so very much regarded by the American sportsmen that the author heard Tony Man offered for sale at £200, whereas he was assured on independent evidence again and again that Mohawk could easily earn £500 a year at the stud. This great difference is caused not at all by any great difference in the prospective merits of the descendants of the two dogs, but merely by the fact that those of one can be registered as "straight-bred," and those of the other cannot. The book of reference is *The American Field's* Stud Book, where those with any cross whatever are registered as English setters, and the others as "Llewellin setters." These straight-bred ones trace on all sides to seven dogs bred in the sixties of last century—namely, Mr. Laverack's Dash II., his Fred, and his Moll III., Mr. Blinkhorn's Lill I., Mr. Thomas Statter's Rhœbe, Sir F. Graham's Duke, and Sir Vincent Corbet's Slut.

That a breed should have lasted without cross for so long, and now be as full of vitality as ever it was, can only be accounted for by the intensely searching selection of the fittest for work, in a manner that tries constitution as well. In America they have from thirty-five to forty field trials each year; the best and severest is the Champion Stake, and wisely the winners of this event are bred from to the exclusion of most others. To have won the stake is to have proved ability to hunt at an extreme tension for three hours without slackening up. That is to finish much faster than the average of fast dogs start when fresh in the morning. The only falling off that the author could discover, compared with the great dogs in England of the seventies and eighties, was the want of size of the best dogs there. Mohawk measured by the author under 21 inches at the shoulder. There are many large dogs of the blood out there, but they are not those of the most vitality, although they

fairly compare in that respect with the best dogs in England. Besides the selection already referred to, what helps to keep up this in-bred race as workers, whereas it died out in England, is the number that are bred in the States and Canada. There are many thousands there; probably in England there are not more than two or three besides importations from America and their descendants. It should be stated, to make this clear, that the setters run of late by Mr. Llewellin at field trials have been cross-breds, and would not be registered in *The American Field* Stud Book as "Llewellin setters." The following are referred to as cross-breds: Border Brenda, Count Gleam, Kitty Wind'em, Border Beauty, Orange Bloom, Pixie of the Fells, Countess Brenda, Countess Carrie, Miss Mabel, Countess Nellie, Puck of the Fells, and Countess Shield. That is to say, all the dogs run by Mr. Llewellin at field trials in the years 1903, 1904, and 1905.

Others who have the blood in this crossed form are Colonel C. J. Cotes of Pitchford and Captain H. Heywood Lonsdale of Shavington, near Market Drayton. The latter has some American-bred straight-breds, but reference is here made to their old and well-known field trial strains. Each of these kennels obtained a large draft of the pure bred sort in the early eighties, or late seventies, and introduced it widely into their own breeds. These were formerly founded on Lord Waterpark's breed, and his were crossed very much with Armstrong's Duke already referred to, so that the crossing of the two strains had the double benefit of out-crossing generally, and yet in-breeding to one particular dog, and that one as valuable in a pedigree as Duke. Some years ago, for an article in *Country Life*, the author tabulated the pedigree of Captain Lonsdale's Ightfield Gaby, and found that he had eight distinct crosses of Duke, and as he was then by far the best setter in England, it was only history repeating itself in the matter of the most successful blood.

Thus the American straight-bred, as has been shown, was obtained by crossing three unrelated breeds of setters together. Unrelated setters cannot now be found without going to the

black-and-tans and the Irish. But such crosses are not required as long as America has a strain of straight-bred ones uncrossed with anything on this side the water for a quarter of a century. Indeed, the value of the American cross has already been proved by Mr. Alexander Hall's Guiniard Shot and Dash. They are bred from a bitch imported from America, but not a "straight-bred" one. These two and Captain Lonsdale's Ightfield Duffer were the best setters seen in 1905, and in their absence another Ightfield bred one on one side of her pedigree, namely, Mr. Herbert Mitchell's Lingfield Beryl, has carried all the spring field trials of the 1906 season by storm, and has beaten the pointers equally with the setters in single and in brace stakes too. She is a long way the best setter Mr. Herbert Mitchell has ever had. Like Ightfield Gaby, already mentioned as the best of his period, the only fault with her is that, with the same beauty of form and strength to carry her light setter-like body, she would have been better if larger.

Of course this is intended to be hypercritical, but it is necessary to point out that Gaby is 22 inches at the shoulder, and Count Wind'em, his best ancestor, was nearer 25 than 24 inches. This is too much to lose in twenty years, for it really means losing nearly half the size of the dog.

It is pleasing to note that the American cross with the old blood, even with small dogs on both sides, seems to recover the lost size. This is a great point; because, although a good little one is enormously better than a lumbering big one, yet a good big one is out of all proportion better than the same form on a small scale.

A few years ago, Mr. B. J. Warwick was winning all before him in the field with setters of very small size. The blood of most of them was a blend of all the sorts named above except the American strain. That is, they were descended from Ranger on one side and from the late Mr. Heywood Lonsdale's sort on the other. They were beautifully broken, had for the most part capital noses and plenty of sense, but few of them are likely to breed dogs better than themselves, because they mostly lacked external form and size. Many of them were bred by Mr.

Elias Bishop, who ran a better sort in the Puppy Stakes in the spring of 1906,—Ightfield Mac,—more fitted, in his then form, for American than for English field trials. The demand there is for a dog; here it is a little too much for a breaker. It is a question whether allowance enough is made at field trials for the indiscretions of youth. The consequence of judging puppies as if they were old dogs is that, when they become so, they are not a very high-couraged lot, and the winning puppies seldom become mature cracks.

There is plenty of evidence that the encouragement of docility instead of determination in puppies has done more to run down English setters than even in-breeding itself. The doer of the most brilliant work will go out if he makes one mistake. In practice there is always a duffer that does not make one.

That is the worst thing that can be said against field trials, and it has only been true of late years. The old style of judging was to select the most brilliant worker for highest honours, and under it English setters made rapid strides.

This handicapping of great capacity goes farther than merely turning a dog out for a trivial fault. The judges often seem to demand a dog with small capacity—that is, compared with the old demand. Here is a comparative instance. In 1870, when Drake the pointer won the Champion Stake, he and a competitor were turned off in a field through which there ran a line of hurdles cutting the field in two. Drake disregarded the hurdles and beat the field as if there had been none, and did the whole field in the same time that his competitor took to do the half—that is, only one side the hurdles. He did not scramble it, but methodically quartered every inch. Precisely the same kind of field occurred at the National Trials in 1906; but when Pitchford Duke got through the hurdles, his handler, knowing the feeling of judges generally, ran after him, whistling and shouting, to get him back to do the 150 yards wide strip that the hurdles divided from the bulk of the field. It is true that Pitchford Duke did not make as if he was going to quarter the whole field in Drake's style, but had it been Drake himself the breaker

THE FIRST OF SEPTEMBER, BY F. C. TURNER.

Showing the character of the black and tan setter before the Bloodhound Cross

CAPT. H. HEYWOOD LONSDALE'S FIELD TRIAL IGHTFIELD DOT AND IGHTFIELD ROB ROY, WITH SCOT THEIR BREAKER

would probably have done just as he did for Duke, and scolded him for what was held to show brains and capacity in 1870 by some of the best sportsmen in the country who were acting as judges, and at a time when everybody knew what dogs should do, because everybody used them.

However, it is dangerous to say a word by way of criticism of an institution to which we owe it that setters and pointers have been preserved at all. We should have had no dog with a will to imitate Drake had it not existed. The only object of saying anything is to appeal for a little more value for "class," and a little less for trick performers. It is very difficult to give effect to a wish of this sort in judging, because faults are facts, and facts are stubborn things; whereas class is generally, but not always, a matter of opinion, on which judges may hold conflicting views. The author was once hunting a brace of setters at the National Trials, and they had done such remarkable work that the late Sir Vincent Corbet, who was judging, was heard to tell someone "that black-headed dog has been finding birds in the next parish." Much of this work had been done under the slope of a hill, where the spectators could not see it; they had formed a semicircle at the other end of the last field that the brace had to do, and the black-headed dog came up the field, treating as a fence the line of spectators who had formed up 100 yards or so within the field. He hunted up to their toes before turning along the line, and dropped to a point within 10 yards of several hundred people, who had been standing there so long that they were obviously and audibly quite sure there was nothing at the point. When the author came up, he could not move the pointing dog; the latter evidently thought he was too near already, and he had a brace of partridges, much to everybody's surprise. This dog, Sable Bondhu by name, was the very highest "class," and to show how right the judge's estimate of him was, it may be recorded that he was the performer of a very remarkable piece of work on grouse.

It was late in the season, and we had been hunting all the morning and finding comparatively few grouse on a beat

generally full of birds. At last Sable got a point from the top of a "knowie," and with his head so high that it gave the impression that the birds must be a very long way off. In starting to go to him, the author happened to see the grouse in a large pack standing with their necks up on another "knowie," about 400 yards away from the pointing dog. That explained the absence of grouse: they had packed upon a moor where they were supposed never to do so. More with the object of scattering them than expecting to get near enough for a shot, we formed single file, and two guns and a gillie, without going near Sable, started to circle the grouse and get ahead of them, so as to put them between the guns and the dog. Strangely enough, they gradually sank down and hid, and we did get quite close to them, and at the risk of being branded poacher, truth compels the confession that we picked up five brace for our four barrels, and besides, scattered the birds in every direction. Sable never moved until he was wanted to assist in finding the dead birds. Those who do not know what very bad eyes dogs have, might think he had seen the birds, but this was not so. The volume of scent made it recognisable at such a distance, and enabled not a speculative, but a *certain* point. The author has many times seen such points obtained at 200 yards at a single brood of grouse, and at more than 100 yards at a pair of partridges. Nothing like this can ever be done by a dog that has not "class"; but field trials often have been won by dogs of no class. That cannot be helped, but it must always be regretted. The no class sort referred to are meetly called "meat dogs" in America, because sportsmen there think there is no object in using them except the requirements of the "pot."

Since the above was written, it has become known that, when in America in 1904, the author selected a couple of unbroken puppies of eight and ten months old, of the straight-bred sort, for Captain H. Heywood Lonsdale, and that, in spite of quarantine for six months, which damaged them exceedingly, Scott, a capital breaker, has succeeded in perfecting one of them. This dog is known as Ightfield Rob Roy, and with much

in hand he beat all the best pointers and setters in the country at the Gun-dog League's Field Trials in July last, upon the grouse moors of Lord Home.

The author was very pleased with the great "class" shown by Rob Roy, not because the English dogs were beaten, but mostly because he has for some years been pointing out that America was assuredly ahead of us, because of our attempt to *breed* docility instead of to *break* it. The writer, in fact, got almost ashamed of comparing the dogs of the present to their disadvantage with the dogs of the past, and felt quite sure it would have been much more popular to have ignored old memories and been satisfied with the best of English field trial work. He was quite aware that this laudation of the days and dogs that are gone was held to be more or less what it so often is. But now that Captain Lonsdale's fine setter has demonstrated that a single selection of the author's in America, with every chance against him, has been able to establish the accuracy of his memory, he believes that crossing will result in bringing back all the old "class" vitality and energy, especially if we were, like the Americans, to establish real stamina trials, and, like them, evolve truer formation. Evolution of form is still in progress, just as it was when our ancestors first differentiated the setter from the spaniel by selection of the best workers.

The author is not concerned to make his experiences fit in with recent Mendelian or anti-Mendelian science. You can't make a silk purse out of a sow's ear, nor will the crossings of plants, guinea-pigs, and mice conform to experiences with higher animals. If they would, Darwin's pigeons would have taught the stud master. They did not. That there is this difference one statement of two first generation facts is enough to prove. It is that if pure-bred white fowls are crossed with another race, equally pure-bred, and black, the offspring will all be black chicks and white chicks, with no mixtures. On the other hand, "in spite of all temptations to belong to other nations," no American pure negro has ever been able to call her offspring a white child.

STRENUOUS DOGS AND SPORT IN AMERICA

IN all the countries in Europe pointers and setters are used, but there are districts in Hungary and Bohemia where partridges are so plentiful that this canine assistance is neither required nor employed. The style of shooting in these districts would make the use of any dogs except retrievers absurd, and the writer never has been able to detect the sportsmanship in employing dogs when they are in the way and hinder sport. The truest pleasure is to be derived from getting shots by means of dogs that one could have got in no other way. This feeling for and fellowship with pointers and setters is to be found in the wild Highlands and Islands of the west and extreme north of Scotland, and also in the greater part of the mountains of Ireland. To a great extent it is also felt in pursuit of the rype of Scandinavia, and of the partridge, wherever that bird is scarce enough to require much finding before it is shot. But throughout Europe there is more or less preservation, more or less boundary to be protected, with the growing demands for artificial methods first, and then, a little later, the substitution of men for dogs. There is also a kind of bastard shooting over dogs, in which a line of guns is formed as if for walking up the game, and then one or a brace of dogs is allowed to run down wind, or up, according to the requirements of the line of guns, and with no thought as to possibility of the wind serving the dogs. But under such circumstances canine assistance is in a false position, and it is distressing to see what happens. A pair of dogs could not adequately serve a line of guns, even if they had all the advantage of the wind,

and it may be safely affirmed that when any attempt is made to walk up game, dogs are out of place, except as retrievers at heel. On a Scotch Highland hillside it may be a question whether a party of four guns can kill most game by all walking in line or by working in two parties and shooting over dogs, but in the former case there is a better way—that of driving the game to the guns, which saves the walking, and the shooting becomes more exciting because more frequent.

But dog work is conducted in such various methods, some of which are so little removed from treading up the birds, that an idealist must hesitate to affirm that it is always preferable to forming line and walking up the game. There is an idea that the place to loose off the dogs is where game has congregated, or been driven into good cover, so that points may recur at every 10 yards. This is when the heavy shooting occurs, but it is not when the dog is most indispensable. The latter happens when there is no more than one covey to every 500 acres, and you have to find it before you have any sport. Some people say that under those circumstances they would prefer no sport. This, however, is a decadent view. We all of us appreciate sport as its difficulty increases, and a bag that was good enough for the great Duke of Wellington and for Colonel Peter Hawker ought to be good enough for any of us if we desire to feel ourselves sportsmen. The author has no word to urge against big bags except this : they cannot form a feature of every-day life for many, if for any of us, and sport can—provided the anxiety to make big bags because they are the fashion does not destroy our love of sport for its own sake. The writer confesses to being one of those selfish creatures who is supremely happy if he has satisfied his own critical spirit, even in such trifles as a day's unwitnessed sport over dogs, the stalking of a blackcock or of a stag, the capture of a reluctant trout, or the killing of half a score of driven grouse out of a pack without a miss. He is well aware that either of these may be the harder to accomplish according to circumstances, and his pleasure is based on the absence of anything that might have been done better. Once in his life he sent a stag's head to a taxidermist, and then

changed his mind and would not have it home; and once or twice he has counted his kills during a day, but never made a written note of them. It has always appeared to the author that sport is its own reward, and that records are rather sad reading, and trophies create memories of the noble dead, and not always pleasant ones. It seems easier to take an interest in other people's records than in one's own, and to admire trophies that one did not victimise.

Surely a true spirit of sport may be the possession of one whose whole household idols are his gun and rifle, and whose total impedimenta are a portmanteau and gun-case. The greater one's belongings, and the more one grows to care for them, the less ready one becomes to go far afield for sport, and the more one is inclined to cling to old memories, even without the assistance of trophies and private written records.

Feats of sport that can be forgotten are not worth remembering, for if enjoyment depended upon the size of the bag or the grandeur of a trophy, every day in which the old record was not beaten would be a day lost, whereas, in sport for its own sake alone, every triviality is supreme for the time being, and one is as keen for small things or great at sixty as at sixteen, although—and more is the pity—a great deal more self-critical.

The author has not ventured to trouble the possible reader with these personal reflections without a purpose—a purpose of making small things interesting, if that may be in an atmosphere of fashion and big bags.

An American prairie chicken and a quail are very small birds, and nowhere are they to be had in the abundance of Norfolk partridges or Yorkshire grouse. But they are as keenly pursued as any game in this country, and the writer was at least as gratified with small-bag successes as he has ever been with bigger bags in this country.

There are many reasons for the appreciation of even small bags of prairie chicken or quail. One is that the birds are for the most part for those who can find them. The actual shooting is so much the smaller matter. You find yourself on a prairie apparently as big and as flat as the Pacific Ocean. In the far

distance you may observe a thin line of smoke as of a steamer hull down; you guess it at 10 miles, expecting to be told you have doubled the distance. Instead, you are informed it is the Trans-Continental railway train, which you know to be 40 miles away by the map. You may shoot to it, driving your waggon all the way, as the dogs work to the sky-lines on either side of you, never stopping until they get a point or come to the waggon for water. When they do point, you drive to them, it may be a mile, before taking the gun from its case and descending from the waggon. You judge of your dogs, not by their "treading up" the game, but by their sense in only hunting the habitat of game, and by the instinctive straightness of their course, first to the whereabouts of birds, and second to the game itself. With that 40 miles of unbeaten prairie in front, you are not reluctant to leave behind unbeaten ground that your dogs repudiate, especially as you see they do believe in what lies ahead, and you have reason to know that they are as reliable in their sense of "bird ground" as in their powers of smelling the game itself. The Americans value them for the former most uncommon quality, which they call "bird sense." In practice it means both the greatest expenditure and economy of canine energy.

Change the locality to the South, in those winter months when all the Frozen North is mantled in white, and when the Ohio and the big lakes are solid ice. The autumn has passed, and Christmas has come and gone, before a shot is fired at the quail on many plantations. The brush has been too thick, to say nothing of the standing corn and the cotton, into which it is not "good form" to ride. You have exchanged your waggon for a saddle-horse. The flat prairie has given place to much broken and rolling ground, much natural covert, but distances are still wide; quail are plentiful for these parts. That is to say, there may be a brood to every 500 acres, perhaps to every 100 acres. As your dogs are sent off, you take care that they are not deceived as to the way you are riding. They will have no other indication as to your whereabouts in half an hour's time, by when they will assuredly have

been seen once or twice. Their sense of locality now becomes of as great importance as their bird sense. If they had not the former, they could either not go out of sight, or, doing so, would be lost. They may be the other side a hill and through a wood and half a mile away, but they can come straight back to you from any point, provided you ride straight. If you turn when they are out of sight, you defeat them, and they lose you. In such country as this it is not surprising that one school of shooters prefer what they call close ranging dogs, which, however, are not quarterers, but merely dogs of lesser courage, or those that fear to be lost. But, every other quality being equal, the field trials are won by the fastest stayers of the wide ranging variety, but such as do *not* lose themselves and *do* find game. In the Champion Stake for previous field trial winners that I assisted to judge in 1904, the rules insist on three-hour heats, and in practice competition demands these heats to be run at top speed throughout; but this speed in no sense means racing, but the most strenuous hunting for game.

Although the close ranging school condemn high ranging on various grounds, it is interesting to note that when they breed a litter of puppies the sires they use are those which have won these Champion Stakes. They are wise enough to know that, given the natural canine energy in their young dogs, they can turn it to advantage either in close or wide ranging, or merely in staying longer at a slower pace.

The broods of quail are not easy to find, because of the strenuous canine work required to cover so much ground, and the bird sense necessary to enable the dogs to select the right ground on which to hunt. When the brood is found and flushed, it scatters. Then any slow dog can find the scattered birds, and this is when the bag is filled; but it is not the valued canine quality, for the very reason that it is common property, whereas bird sense, sense of locality, and covey finding in the highest degree, are rare traits by comparison.

One day when the writer was shooting in Tennessee, his host had out three handlers of dogs, each mounted, and

each working a brace of field trial winning setters at a time, with frequent changes. The sound of the horn was indicative of a point, and a long gallop had frequently to be taken to get to it. When the beat is in progress, the horses usually travel at a fox trot, or about six miles an hour. But even six crack dogs proved none too many for sport, so scarce are quail in some parts, and in this particular part they fairly swarmed in comparison with much of the Frozen North.

These high-couraged dogs that seem to take no hint from their handlers, but to think entirely for themselves, nevertheless have but to see their handler off his horse to take it for a signal to quarter the ground closely for scattered quail, or to hunt like a retriever for dead birds. Then upon the handler mounting again, their natures seem to change upon the instant, and they shoot off in a mighty hurry to make some cast that they have had "in mind" probably all the time they have been doing what is called "bird work," as tamely as and obediently as any English field trialer.

Some people look upon this riding to pointers and setters as new, and think these dogs were never intended for any such purpose. On the other hand, it appears probable that they could not have invented their bird sense and sense of locality, which are doubtless instinctive and hereditary. It is the fashion to think our ancestors were slow in their movements. So they were, no doubt, when they could not be quick, but others besides Colonel Hawker knew the advantage of bustling along after partridges by means of a shooting pony and quick pointers; and others besides Joe Manton have found that "going slow" was not the royal road to success, nor buttermilk as good for pointers as for points. It was not fair of the Colonel to prepare certain failure by means of buttermilk. Used in this way, the shooting pony in conjunction with pointers and setters is not often seen now in England, but it certainly was very common when the ridable portions of the country were mostly shot by the assistance of those dogs. It is probable, therefore, that this American form of shooting, brought to perfection there by means of field trials, is really

more like English shooting at the dawn of the nineteenth century than our own shooting over dogs is like it.

But whether that is so or not, the writer is certain that this strenuous work is the right method to maintain the generations of the dog, and that there would be no sense in the theory of evolution if these Champions were not the best dogs to breed from. At any rate, although the Americans owe to us all their breeds of pointers and setters, no recent importations have been able to win there, and, on the other hand, the first American cross-breds to be brought over have annexed some of our field trials. The reference is to Mr. A. Hall's Guiniard Shot and Dash, victors in a brace stake in 1905, and good enough with a little luck, and in the hands of any but a novice, to have beaten the best running in our trials that year, although they were only four days over the age of puppies when they competed against old dogs.

Another charming method of shooting is found still farther South, in Georgia, where there are vast areas of pine forests and quail in them.

Here it is common to *drive* through the pathless woods. The waggons are often driven over a fallen tree that to English eyes seems to bar the way. It is an article of faith that if the horse can get over, the buggy will follow.

There is naturally a limit to one's range of vision amongst straight stems, although there is no brushwood to interfere, and the way free rangers when upon the point are found in these woods, as also in the brushwood outside, is by means of other dogs; there may be half a dozen hunting together, and several spare animals in the buggy. If careful watching does not discover the last direction taken by the dog on point, it will do so of one or other of the backing dogs, and, failing that, another is turned out to look for the out-of-sight brigade. January sport is like driving in the English pine districts on an early September day, and shooting partridges in the woods (for the "quail" or "bob-whites" are partridges, and not quail) and the bracing freshness of the pine-laden air has, with good

reason, caused New York fashion to winter in the pine districts of Georgia, of which Thomasville is a good specimen, for sport and health.

Since writing the above, a puppy the author selected in America in 1904, then eight months old and unentered, has beaten all the pointers and setters at the grouse trials on Lord Home's beautiful Lanarkshire moors, in August 1906. This is Captain H. Heywood Lonsdale's Ightfield Rob Roy, and very fully confirms a view expressed above, that the severest tests are the best for keeping up a breed. This dog comes of the remarkably in-bred race referred to in the chapter on English setters, and it need not be mentioned further, except to say that the pure breed as first-rate performers came to an end in this country owing to in-breeding, without at the same time selecting as severely for vitality as the field trial system does in America. Selection has negatived the well-known influence of in-breeding in everything except in size. This pure bred in-bred race was originated over there by the author's selection for Americans of dogs all descended from those six setters named in the chapter on English setters, and picked and recommended from the kennels of the late Mr. Tom Statter, the late Mr. Laverack, the late Mr. Barclay Field, Mr. Purcell Llewellin, and others. In the exported originals they were Laverack and Rhœbe crosses, like Mr. Barclay Field's Rock on the one hand; Laveracks, like Mr. Laverack's Victress (Dash and Moll); Laverack and Rhœbe crosses like the late Mr. Statter's Rob Roy; Duke and Rhœbe crosses bred by Mr. Statter, of which strain two big bitches were sent out; and others of the three crosses, Duke, Rhœbe, and Laveracks, like Mr. Llewellin's Druid and his Count Noble. The demand for them arose in consequence of some letters the author had written in the American sporting press referring to the superiority of these three strains over any others of that period. The author even ventured to give them a title, namely "the Field Trial breed," and that was the sole reason why they were kept uncrossed with other blood in America. It is this uncrossed blood that is represented in

Captain Heywood Lonsdale's Rob Roy, but that this race of in-breds is still valuable (and in America by far the most valuable) is owing to those three-hour stamina trials by which the sires are selected. It was because of the severity of those tests that the writer felt sure that he could select in America superior material to any our breakers have to work upon. That idea was not very popular when it was first stated some five years ago; but those who had taken the opposite view were generous when they saw Rob Roy's performance, and, as one of them remarked, they "took it all back." The crosses of this energetic strain cannot fail to improve our setters, and if we could only import the severity of selection of the best winners by further more severe stamina trials, we should not be long behind America. There the breed has a Stud Book registration to itself, for which any cross whatever disqualifies. They are registered as "Llewellin setters," which was for some reason substituted for the "Field Trial breed" which the author had given. In conversation they are spoken of in America as "straight-bred," and in England the best designation is "the American straight-bred setters," since it is necessary to know that we are not speaking of the same breed as Mr. Llewellin's recent field trial representatives, which are crossed, and could not be registered in the American Stud Book as Llewellin setters or straight-bred ones. About thirty-five field trials for pointers and setters are held every year in America, and honours rarely, if ever, fall on any other race except setters, either straight-bred or having 90 per cent. of the blood, and on the pointers.

THE IRISH SETTER

FASHION has made the Irish setter a red dog, whereas there used to be many more index dogs of Erin red-and-white than red. Fashion in this case has been the dog show, but if that had been all the result of its influence the author would have been content. It is the Irishmen who are most concerned, and the fact that the Irish setter is the worst colour in the world to see in a Scotch mist can be well understood not to matter in Irish atmosphere and manners of thinking. Between 1870 and 1880 the dog shows had attracted most of the handsomest dogs in Ireland, and many of these were very good workers.

From time to time an Irish setter has been good enough to compete with success at English field trials, and although on occasion such an animal has carried all before it in its stake, neither in England nor America has one of the breed ever won a Champion Stake, so that probably it will be considered fair to say that poor competition has brought the Irish to the front when by chance they have come out first at field trials. The author has seen and shot over many charming red setters, but he has never seen a really great dog of that breed—that is, not a dog in the same class with the pointers Drake and Romp's Baby.

The best Irish setter the writer ever shot over had the peculiar luck of always finding birds when, by the manners of other dogs, there appeared to be none about. Many a time has a bad day been redeemed by letting off this beautiful red dog, a son of the field trial winner Plunket. To some good judges of dog's work the field trials appeared to be at the

mercy of this setter; but he had a peculiarity often to be found in those of his race—he would only hunt for blood, and consequently out of the shooting season he was as useless as an ill-broken, careless puppy. He would run up birds without appearing to smell them before they rose, or to see them afterwards. Instead of waiting on your every wish, as he did in the shooting season, he took no interest whatever in the proceedings, and you could not cheat him into believing business was meant by the use of blank or any other cartridges. It is easy to defend such a characteristic in individual or race on the ground that it shows their sense. So it does, no doubt, but it also shows that the questing instinct is weak in them, and there are good reasons for preferring it to be very strong. The breaking season is the spring, and a dog that will not hunt for all it is worth then cannot be broken. As a matter of fact, only few Irish setters ever are highly finished. More than half of those that have come to field trials have been unsafe in the abode of a hare. At the same time, those that are taken to spring field trials hunt well enough, but of course these are a very small proportion.

In popular opinion the greatest fault is that the race carry low heads; at the same time, this carriage does *not* invariably mean bad "noses." The writer has seen an Irish setter turn a complete somersault over its own nose, which it ran against a stiff furrow of a fallow field; but this one had a good nose, although not the very best. The author was judging one year at the National Field Trials with Mr. George Davies, of Retriever fame, when Colonel Cotes' fast and good pointer Carl was sent off against an Irish setter belonging to Mr. Cheetham. The latter never lifted his nose in hunting or in drawing to game more than would miss the buttercups, but nevertheless, from behind, he again and again found partridges that the other dog, much nearer, had failed to detect. Carl was very fast and the Irish setter very slow, but the former was beaten pointless.

There is a fiction that Irish setters are faster than other dogs, but this is not the case. It is much more usual to see them out-paced, as in the above-named instance. It may be

that they generally have so merry a stern action that they look to be bustling, when in fact their actual getting over the ground is not fast. Their low noses cause them to take very narrow parallels when they are careful, so that if they are judged by the ground they actually cover or beat they are usually of less capacity than their only moderate speed suggests. They ought to last well at the pace they go, but although stamina is said to be another of their strong points over English setters, the author has known many of the latter breed that could do more work than any Irish setter he has seen. These have included some of the best Irish setter winners at field trials. But years ago there were Irish dogs that could go a good pace and stay well. They were bigger dogs than those which win at shows now, and looked more like workmen. It is to be feared that breeding for show points has evolved a bustling and busy rather than a business-like race. They are now smaller, shorter, especially in the quarters, and more upright in the shoulder, than the best of the old sort. There is not now anything at all like Palmerston and Kate, winners at Birmingham about the same time. The last-named was probably as well made and as setter-like as any dog could be, and to compare the present show setters with her is like comparing a polo pony with a Derby winner. At the spring field trials of 1906 only one Irish setter was entered, and that one was far from being even moderate in its work.

There may be dogs of the old type hidden away in Ireland, and if so they are much more worthy of attention than those which for so long have been bred for show points. The best Irish setters the author has seen for the last ten years are those of Mr. Cheetham. This gentleman kept them for grouse shooting in the Lews, and as his shooting was late in the year, when the heat had departed, they were admirably suited for the purpose.

The opinions given are of course based upon comparisons of the breed with the very best of other races of setters and pointers. There is one point, however, in which the Irish setters seem to be the inferiors of all others—namely, the large proportion of inferior animals bred, compared with the small

number up to a fair English setter working standard. This remark has reference to the natural ability, and not at all to the difficulty of breaking the breed. The latter charge against them is true also, but only because their excitement is greater than their love of questing. Mostly they would rather chase a hare than point a bird. It has been said of them that they want breaking afresh every year, but that has not been the experience of the author, who has invariably found that a thoroughly broken dog is broken for life, of whatever breed it may happen to be.

Irish breaking, however, has not always been very thorough.

It has sometimes been said of the *old* dogs of Ireland that they required half a day's work before they were steady. In that case, they would require similar renewal of breaking every day, and the author has made the observation that such dogs are too wild all the morning and too tired all the afternoon to be a pleasure to shoot over.

But they are not all hard to break; some of those which are not too excitable are very collie-like in their intuition of your wishes and their anxiety to obey them.

It is noteworthy that the Irish have always held their field trials in the autumn.

An old writer says that the English claim theirs as the true English spaniel, whereas the Irish claim theirs to be the real true English spaniel. This is not very informative. The dogs alluded to were of course both setters, but of what colour we are not told in respect of the Irish dog.

The author shot over the celebrated field trial winner Plunket for several seasons and ran him at field trials, but after he had turned two years he was little use in the spring, whereas he won well in the autumn, when game was shot to his points. In this he was similar to a much better dog, his own son, already referred to. Plunket was a fast dog, and his boldness and beauty in going up to game was quite remarkable, as he would draw up to birds at racing speed, as if he meant catching them, but stopped suddenly and in time. Then, when they ran away from his point, the moment he was ordered to

draw on he would again dash forward, and again locate his game with equally sudden points. But the majority of good English setters at that time could out-stay him, and particularly the Laverack setters Countess and Nellie, with which he often worked, could have killed him. Mr. O'Callaghan's setters were rarely good enough to go to field trials, and although two of them won there, they were very lucky to do so. Perhaps these dogs deteriorated less than any other breed that were bred for show, or perhaps it would be safer to say they declined in work slower than others, but there is no doubt that they were on the down grade, not only in work but in true setter appearance. That they were as *pretty* as any dogs could be at one time is freely admitted, but they had lost three-parts of the scope of Palmerston and Kate, and their character of work was spaniel-like rather than setter-like—in fact, just what their looks led one to expect they would prove to be.

Unfortunately, the author has never seen the Irish field trials: the reason is that the English pointers have usually proved better than the Irish setters, so that there seemed to be nothing novel to see by going. But it is very difficult to believe that the show Irish setters that usually represent the breed at English trials are the best workers of the race. The character of the breed when the author first saw it at work in the sixties was distinctly setter-like, and not spaniel-like.

There has been a great deal of controversy upon how the dark-red colour arose. Mr. John King, who knew more of Irish setters than any other man known to the author, affirmed that red-and-white was the original colour, and the general opinion was that those of the last-named markings were the most easy to break. All the most setter-like Irish that have come before the author have had more or less white upon them, and as colour certainly denotes blood or origin, and the manner of hunting of the whole-red dogs is spaniel-like, it does not seem to be unlikely that the springer spaniel, the colour of a blood bay horse without a white hair spoken of by a Suffolk parson in the middle of the eighteenth century, may have had a good deal to do with the origin of the red Irish setter. At any rate,

no other setters or spaniels of the colour can be traced in the early history of what was then the English spaniel, or the setter.

The same writer says that the English spaniels (setters) were of two colours, "black-and-tan" and "red-and-white," so that there is another possible origin of the whole-coloured red dogs. Black-and-tan setters often produced a red dog, but not the Irish dark rich red. This red puppy in the litter might have arisen from an Irish cross, but, on the other hand, it might have been a blend with the lemon-and-white coloured English setters, or the result of puppies following the markings of one ancestor and the colour of another. Those that the author bred from black-and-tan parents had no dark hairs to suggest their origin, but neither had they the rich chestnut of the Irish setter. The writer's experience of breeding dogs inclines him to the belief that the spaniel-like tendency of the breed, now that it is selected for all-red colour, is proof not only of its spaniel but probably of a springer origin. Their excitement, their merry low-carried sterns, and their noses on the ground, speak like an open book to one who has bred and watched the breeding of all races of setters for forty years, and has assured himself that selection for colour is the automatic selection of character usually found with that colour.

The late Mr. Laverack was of opinion that crossing his black-and-whites with the lemon-and-whites of the same litter was in fact equivalent to cross breeding. However, he lived to introduce red dogs in his breed, so that the former kind of crossing does not do everything. There is no doubt that size and fertility suffer by this method, but however often the incestuous breeding is repeated such a thing as a blend of the two colours was almost unknown—that is to say, when a liver-and-white one did, very rarely, make its appearance, Mr. Laverack himself traced it to a former cross with the Edmund Castle breed of liver-and-white setters. There was always a difference other than colour between the lemon-and-white and the black-and-white brothers and sisters—a difference which suggested two distinct sources of origin of not at all related breeds. Consequently, if the red-and-white has not been entirely

eliminated from the Irish setter, and if they sometimes do revert, the author would expect the reversions to be more setter-like and less spaniel-like than the present show Irish setters, and to be more like Dr. Stone's Dash and the Kate and Palmerston already mentioned.

Since writing the above, the author remembers that on one occasion he bred from an Irish dog and a black-and-tan bitch, with the result that the puppies were liver-coloured. Yet when two black-and-tans were bred together thirty-five years ago, there were usually a couple of red puppies in the litter showing neither liver, black, or black tinge, or even dark-red colours. This does not support the theory of a black-and-tan origin of the whole colour.

The collie-like sense of the Irish setter has been referred to, and a case of the kind may be of interest. In 1873 the author was shooting along the shores of a loch in Inverness-shire, hunting a brace of setters, one of which was a red Irish puppy. A grouse was killed that fell out into the lake, there about a mile wide and several miles long. The dogs dropped to shot, and there lay while the party waited to make sure that the wind would not bring in the grouse, for we had no retriever or any setter that had ever retrieved. It became evident at the end of a few minutes that the grouse was slowly drifting away, and the order was given to continue the beat, leaving the bird to its fate. But the young red setter was no sooner on its legs than it darted straight to the lake, jumped in, swam to the grouse, brought it to land and there dropped it, shook itself, and started to hunt for more live birds.

That was the first and also the last bird it ever retrieved, although it was constantly encouraged to make further attempts. Of course this looks like reason, but that is questionable. At any rate, it was startlingly smart, and about as unexpected a canine performance as could be conceived.

Another of the breed was so smart in finding wounded game that he ended as a retriever in Yorkshire grouse driving, and was said to be better than several retrievers, although he never lifted a bird, but merely put a foot on the grouse and waited to

be relieved, when he would go quickly and straight to the next wounded bird, and so on until all were found.

It is probable that even wild grouse do not often fly from a dog unless they associate him with the presence of man. When using a parti-coloured team of black-white-and-tan setters with some lemon-and-white dogs, the author has noticed that wild grouse soon got to expect the man when they saw the dogs, and he has found that by using a red dog then, the birds behave differently, probably mistaking the Irish setter for a Scotch fox. At any rate, when they ought to have been very wild according to locality and season, grouse have been noticed to treat a red dog with a certain amount of resentment and walk away from him, flicking their tails as they move, plainly expecting the rush, and unwilling to fly before it came. What they obviously did not expect was that there was a man with a gun.

THE BLACK-AND-TAN SETTER

A SPORTING parson of the middle of the eighteenth century tells us that the English setters were then of two colours, red-and-white and black-and-tan. Whether the author meant to say black-white-and-tan seems a little doubtful, but in any case there were black-white-and-tan setters long before this, as is evidenced in one of Dürer's pictures, and this Flemish artist died in 1528. When this picture was exhibited at the Grosvenor Gallery in 1891, it escaped the notice of the author in spite of several visits, but Mr. Rawdon Lee describes the dog illustrated as a black-white-and-tan setter, less spaniel-like and more on the leg than the modern show setter. Then, half a century later, our earliest writer on the dog mentions the setter, or index, as a distinct dog from the spaniel, and at the same time throws doubt upon the Spanish origin of the latter. It was in 1570 that Dr. Caius of Cambridge wrote upon the dog; unfortunately he appears to have known nothing except the duties of the setter, for he does not describe either its origin, its colour, or appearance.

It has been said that the Duke of Gordon got the black-and-tan colour by crossing with the collie, but the majority of the Gordon Castle dogs were black-white-and-tan, and some were red-and-white. That is to say, they may have been and probably were the colours that the eighteenth-century writer meant when he described those of the "English spaniel"—that is, the English setter.

About 1873 the author had a long talk with the late Lord Lovat and his keeper, Bruce, at the kennels above the famous

Beauly pools, that the same good sportsman rendered for ever famous by his wonderful kills of salmon.

It was an article of faith at Beaufort, where the kennel book had been kept up since the end of the eighteenth century, that the old Duke's Gordon setters and their own living setters were identical in blood and appearance. They were bred together, and after the Duke's death this inter-breeding was kept up between Lord Lovat's and the other kennels which had the blood. One of the principal of these was that of Lord Rosslyn, in Fifeshire. But for some time this latter exchange of blood had been dropped, because Lord Rosslyn's dogs had been crossed with the bloodhound to get nose, or so Bruce told the author.

What it did get was colour—that is, a bright black-and-tan without white; whereas those dogs that were black-and-tan in the Lovat kennel had white feet and fronts, but a very large majority had body white as well. At that period those black-and-tan setters that went to the shows were of two distinct types: one lot were light-made, active dogs, and the other, including the descendants of Rev. T. Pearce's Kent and those of Lord Rosslyn's blood, were very heavy in formation. Kent either had no pedigree or a doubtful one, but was all the fashion, and whereas a first cross with him was of benefit, in-breeding on all sides to him has rendered the black-and-tans of to-day lumbering, and so constitutionally weak that the exhibitors have been unable to keep the breed going, although they have neglected to demand working ability in favour of the points they adore. In the sixties and early seventies the Rev. Mr. Hutchinson, of Malmesbury, wrote a good deal about the lighter strain of black-and-tan setters which he and the late Sir Fred Milbank had constantly used together in the Lews. The author tried these dogs, and although they were certainly built for racing, they unfortunately could not race. Their breeder believed nothing could live with them, but when they came to be measured with others (and that is the only way to be sure) they were not better in speed than the heavy Kent and Rosslyn dogs, and not a patch upon the best Irish setters, which, again,

were inferior in speed and stamina to the best English dogs. In 1870 the author entered a lot of his own breeding at the National Field Trials. They were reported by Mr. J. H. Walsh, then Editor of the *Field*, to have done "faultless" work, but were slow by comparison with some of the other dogs, and although that gentleman did not think they were beaten, disappointment at losing did not disguise from their owner that they were out-classed. From that time to quite recently no pure bred black-and-tan setter has had much of a look in at field trials, until Mr. Isaac Sharp came out with Stylish Ranger. But between the exquisite breaking of Mr. Sharp and the good nose of his dog they managed to get in front of all they met, at a period when field trial dogs were at a rather low ebb, and when in the judges' opinions breaking counted for more than work. If those opinions had obtained in 1870, the author might have won all before him with his black-and-tans, but in that case he would probably never have acquired the knowledge of the infinitely better.

This first field trial attempt was made with the heavy Kent and Lord Rosslyn sort. The author bred several litters from direct crosses of Lord Rosslyn's best dogs. His second attempt to win field trials was made with the light-made sort of setter from the Lews; but results were always the same. Still, although those results were true, the black-and-tan breed are never seen to advantage in the low country or in the hot atmosphere of central England. They become twice the dogs late in the season and on the high grounds of Scotland, and their size and long legs are not a hindrance in deep old heather. Moreover, they almost break themselves, or used to, thirty-six years ago, and where hills have moderate angles and shooters interminable patience, they are comfortable dogs to shoot over. Like the Irish, they do not mind wet and cold, and many of them have good noses and carry high heads. But they were different in character from English and Irish dogs. Once, and only once, the author has seen a setter draw down to a brook at some scent, apparently from the other side, but instead of crossing to investigate, on this occasion the dog stood up on his hind

legs to get a higher current of the tainted air, and then, having made sure in that way, crossed the brook and pointed on the rising ground beyond. This performance was accomplished by one of the light-made black-and-tans of the Lews blood before spoken of. What any other breed of setters would have done would have been to swim the brook and try the other side in the first instance, and this incident sufficiently explains the difference of temperaments of the black-and-tan setters from those of other races. In other words, the wisdom of the black-and-tans is partly born of weakness of the flesh, for although bigger dogs than most setters, they are not able to carry the extra weight.

In the first Bala field trials the Marquis of Huntly had a son of Kent which, according to the points awarded by the judges, came out first. But the judges did not follow their points, and gave the award elsewhere. The author did not see that trial, but it is noteworthy because it was the last time a black-and-tan of pure blood seemed to have a chance of victory over the best of the period until the time of Stylish Ranger. It is also noteworthy because the dogs beaten, on the ground of bad breaking, afterwards proved towers of strength at the stud, whereas the victors did not. The beaten included Mr. Tom Statter's pointer Major and Mr. Armstrong's English setter Duke. Probably these were the two most potent influences of setter and pointer breeding that ever lived.

One incident in the breeding of black-and-tan setters did very much to make them for a time the most popular breed. It was this. Much controversy having arisen as to the setter character of Kent, a great dog-show winner, his owner asked the Editor of the *Field* to select a puppy and run it at the field trials. This was done, and the puppy came out well, and actually beat the celebrated Duke on one occasion. This was naturally accepted as proof of the pure breeding of Kent and the correctness of his type. What it probably ought to have proved was that Rex (the young dog) was better than others, because he followed in instinct the pure bred side of his parentage, and received vitality from a not very remote outside

cross of blood. Four years later, Duke was sire, or grandsire, of the winners of first, second, third, and fourth, at the National Field Trials, and the black-and-tans had practically ceased competition at those events.

The author may say of black-and-tans, as he has of the red Irish setters, that he never saw a great dog of the breed, although he has seen many good ones. Probably the best that ever ran in public was Mr. Sharp's Stylish Ranger, but he would not have beaten the 1870 brigade on anything but breaking, or rather handiness; for Mr. Sharp could put him anywhere by a wave of the finger. It is probable that there are better black-and-tan setters kept in Scotch kennels for work than those which go to dog shows, and since Ranger's withdrawal and exportation they have ceased again to appear at field trials.

They have been too long bred without back ribs, with light loins, with clumsy shoulders and big heads, to induce the belief that by selection they can be improved. But they might be placed on a much superior level by means of a cross and selection afterwards. Mr. Sharp's celebrity was bred by Mr. Chapman, who is, or was, a dog-show man. It is necessary to say this in order to be quite fair to dog shows; but any attempt to improve the breed by crossing would be most likely to succeed by a cross on a base of black-and-tan setter that had been kept for several generations for work only. The show points valued for this breed are really not setter points at all. In considering the possibility of improving, it is always necessary to know the history of a breed, and that of the black-and-tan is undoubtedly indicated above. There is evidence in Mr. Thomson Gray's *Dogs of Scotland*, published in 1891, to show that the origin of the Gordon setters was as suggested above—that is to say, black-and-tan and lemon- or red- and-white, just what the old Suffolk sportsman said of English setters fifty years before he wrote in 1775. Mr. Gray says there were also black-white-and-tans and liver-and-white dogs.

But the "Gordon setter" never meant what those setters originated from, but, on the contrary, what they became under the last Duke of Gordon, and this we have ample evidence,

from Beaufort Castle, from the Duke of Richmond and Gordon's kennel, and from Lord Cawdor's strain, to prove was black-white-and-tan, and that was also the colour of the dogs at the dispersal of the Duke of Gordon's kennel in 1837. So that it is a mistake to call black-and-tan setters Gordons, for although the Duke's celebrated strain was partly originated from dogs of that colour, so also were all other English setters. Gervaise Markham, in *Hunger's Prevention; or the whole art of fowling by Land and Water,* in 1665, speaks of black-and-fallow dogs as the hardest to endure labour, so that there is no doubt about the existence of black-and-tan setters before the Duke of Gordon started to pay attention to setter breeding. There is also no doubt that the Duke's dogs were bred and crossed in colours until they became black-white-and-tan. The author has shown how the black-and-tan colour was restored in the Gordon of the present time by the bloodhound cross, and it only remains to say that the reason the black-and-tan colour is now accepted as that of the Gordon came about from the early classification of the Birmingham Dog Show, where true Gordons were placed in the English setter classes, and all kinds of black-and-tans in the class for Gordons, although some at least, probably many, of that colour were not Gordons. That the bloodhound cross destroyed the merits of the various races of that colour may be gathered from two facts. One was that the first dog show was won by a black-and-tan, and the other that the first field trial was also won by a black-and-tan. No doubt both these dogs were descended on one side or other of their pedigree from the Duke of Gordon's dogs, but it is doubtful whether they got their black-and-tan from that side. Their pedigrees can be looked up in the first volume of the Stud Book. But if they are read by the light of a pedigree of a dog that belonged to the author and was of much the same breeding, a pedigree which also occurs in that volume, it will be seen that they might be Gordons only so far as they inherited black-white-and-tan blood, and were of other breeds so far as they inherited black-and-tan blood. To make what is intended clear, the entry is quoted:—

"Bruce—Mr. G. Teasdale-Buckell's, Wellesley Hall, Ashby-de-la-Zouch: breeder, owner, born 1869 (dead). Pedigree: By Lord Rosslyn's Rokeby (No. 1622) out of Blaze, by Old Reuben out of Belle, by Kent (No. 1600) out of Duchess, by Nell out of Stella, by Lord Chesterfield's Regent (purchased at the Duke of Gordon's sale) out of a Marquis of Anglesea bitch: Regent, black-white-and-tan, was by Old Regent out of the Duke of Gordon's Ellen."

Duchess was a light-made black-and-tan, and her dam was by the undoubted black-white-and-tan Gordon for which Lord Chesterfield gave 72 gs. to Tattersall's at the Duke's dispersal sale, and her mother was a Marquis of Anglesea bitch. Where did the black-and-tan colour of Duchess come from? The reply is, not from Stella at all, but from Ned (mistakenly entered as Nell) in the pedigree quoted; and he got his colour from Mr. F. Burdett's Brougham, which there is nothing to show was a Gordon at all, although he was descended from black-and-tans on one side at least. This same Brougham became the ancestor of the most famous breed of English setters—namely, the descendants of Mr. Tom Statter's Rhœbe, winners of hundreds of field trials in this country and America, and which are still the best setters there are.

But when the breed became crossed with the Lord Rosslyn's and Kent strains of black-and-tan blood, it practically ceased to be the setter at all in a very few generations. That is why any attempted revival of the black-and-tans ought to be based on dogs the ancestors of which for generations have been good enough to keep for work, and with no ulterior objects. But it would be an uphill business, for nothing in breeding is more certain than that colour is indicative of blood, and to select for black-and-tans would be to select the wrong type a hundred times in a hundred and one.

On the other hand, if any of the old light-made black-and-tan dogs, with dish faces instead of hound profiles, could be found, the black-and-tan colour is so prepotent that they might have any cross of parti-coloured strain and yet perhaps not show it in the colour in the first generation. Although black-

and-tan is a much more prepotent colour than any parti-colour, it is not so much so as the whole colours black and red. Probably it cannot be produced by breeding these two last-named together. Then facts seem to indicate that the ancestors of our setters were some whole-coloured races or black-and-tan dogs of some wild or domestic kinds.

After grouse have got wild to a team of light-coloured dogs, some shots may often be had over a black-and-tan setter. Possibly the birds mistake the setter for a collie, and the gunner, if suitably dressed in imitation, for the shepherd. There are occasions when, on the contrary, the grouse are more afraid of the sheep-dog than any other, and this may not always mean that the shepherd, like his dog, is a poacher.

It has been said that a black-and-tan is a bad colour to see on the moors, but this is not so. No sportsman would use a black coat for shooting, because it is more conspicuous than any other, and what is true of the man's coat is true of the dog's colour.

COL. C. J. COTES' PITCHFORD MARSHAL, SEVERAL TIMES A FIELD TRIAL WINNER

COL. C. J. COTES' MONK, AN INTERMEDIATE LINK BETWEEN THE IMPORTED DOG TIP, OF 1832, AND MARSHAL, NOW IN FULL VIGOUR. MONK IS SAID TO HAVE BEEN VERY FAST

MR. JOHN COTES' IMPORTED LABRADOR TIP, FROM AN OLD PICTURE AT WOODCOTE

The dog was whelped in 1832, and presented by Mr. Portman to his owner From this dog is descended the field trial winner, Col. C. J. Cotes' Pitchford Marshal, and his Monk, an intermediate generation. This dog is more like the dogs at Netherby 45 years ago than is the present race of Labradors

RETRIEVERS AND THEIR BREAKING

RETRIEVERS are now by far the most popular gun-dogs in this country, whereas in America they are considered useless, with the exception of a few that are kept exclusively for duck shooting, and which are called Chesapeake Bay dogs, and are a distinct breed from any we have in England. Ninety-nine-hundredths of the work of English retrievers is on land, and although a retriever can hardly be called perfect unless he will hunt in water, and get a winged duck if that be possible, yet it is absolutely impossible to have a dog that is perfect in everything (or so it appears), and therefore a shooter exercises a wise moderation in his demands when he insists on perfection in one department rather than moderation in all.

People purchase and use retrievers for either one or more of several reasons:—

1. Because they like a dog.
2. Because they like to collect more game than they shoot.
3. Because they do not like to leave wounded things to die in prolonged pain.
4. Because when they are out of the house they like to have something that they can order about.
5. Because the dead game that can be seen is easy for the dog to retrieve.
6. Because the wounded game that cannot be seen is difficult for men to pick up.
7. Because a handsome retriever gives a finish almost equal to neat spats to a shooter's turn-out.
8. Because it is much easier to gain credit for sportsmanship at a dog show than in the field and covert.

9. Because there is a demand for stud services at remunerative fees.

In America they do not use retrievers, because they can make all their pointers and setters retrieve, and they must have some of the index dogs or they get no sport, so that they will not keep two dogs to do the work of one.

In England there are three sorts of retrievers, and crosses between each, besides Labradors and spaniels. These three are the flat-coated variety, the curly-coated sort, and the Norfolk retriever, with its open curl or wave of coat. The author believes that the curly-coated show dog is now useless, that the Norfolk dog has gone off in looks, and that the flat-coated retriever is open to regeneration when he is bred more wiry and less lumbering. Besides this, many of the breed are short of courage to face thorns, and slack to hunt also. Gamekeepers say that the highest trial of a retriever's ability and pluck comes at the pick-up the day after a big shoot. Especially is this so on grouse moors, where no ground game or living creatures of any kind are to be found around the butts, and where probably not a gun is fired during the whole hunt for yesterday's lost dead. The author has never seen this phase of retriever work; but he believes there are very few dogs that could not get enough of that kind of thing, and that the absence of sport and the search for cold meat might make the best dogs inclined to "look back" for orders. On the other hand, grouse collecting after a drive is just finished is the easiest of all the work the retriever is called upon to perform, for except where there are peat hags or open drains a grouse with a broken wing will not run very far. In one sense retriever work is more difficult than it used to be when game was walked up, for the necessity for remaining quite still until a drive is over, whether the game be grouse, partridges, or pheasants, often gives the wounded a twenty minutes' start. Consequently, it is likely enough to get clean out of the range of a retriever by the time he is started. It is all very well to say that he should get upon the foot scent and stick to it; so he should, and probably would

much oftener than he does, but for the fact that there is around the fall of the wounded in all directions the scent of other dead and wounded birds. What is often asked of a retriever, then, is to neglect the strongest and freshest scents and to try for the weakest and oldest. In order to get this work well done, a retriever should be willing to range wide, outside the radius of the dead birds, so as to find either the body scent of the crouching wounded bird or its foot scent after it had got clear of the floating scent of the many dead which fouls the ground long after the fowls have all been removed from it. But the misfortune is that a high ranging retriever is not always willing to hunt close for dead birds and those that have not moved far. However, this can be taught; whereas there are many fair retrievers for close hunting that could not be taught to hunt wide for a moving "runner," for the reason that they have not the necessary pluck.

A great deal of difference of opinion exists as to whether a retriever should carry a high or a low head. But there is no doubt that a good dog must do both as occasion requires. Many times has the author seen a high-headed retriever find the fall of a wounded bird 60 yards away, go straight to the place, glue his nose to the line, and never look up until the bird fluttered up in his path. But even this low nose on the foot scent is not invariably desirable, and the same retriever that at one time worms out a line down wind will often run like a fox-hound, head up and stern down, when the direction is up wind, or even side wind. The higher the dog carries his head the faster he will go, and consequently the sooner he will come up with his game, so that to insist on retrievers carrying a low nose, even in roding game, is to insist on mediocrity. Every retriever should put his nose down as soon as he has satisfied himself that he cannot do the work with a high head. Of course a retriever cannot find even a fresh-shot bird if a man is standing over it, and as the habit is for shooters and beaters to go and "help" look for lost game, it follows that retrievers learn to put their heads down, for they know that unless they ram their noses nearly into the feathers the scent cannot be detected

under such humanising conditions of scent. It is a good plan to pick up by hand all the game that lies near and within sight of where the shooters stood before sending the dogs, and when the dead pick-up is collected, to send the game off down wind of the place to be hunted, so that the scent of it does not mix with the similar scent of some long-gone runner. Then if the ground to be hunted is up wind of where the dead birds were, everything will be in favour of a dog started from that spot; if, on the contrary, it is to leeward of the fall of a lot of game, it is well to go still farther down wind with the retriever, and start him 100 yards or more away from the tainted ground. Then, after trying around for a trace of foot scent, it is easy enough to work back if no indications are found. The object is to get the retriever as quickly as possible on the line of wounded game, without letting him lose time lifting dead ones or hunting for already "picked" birds.

In walking up game one of the most difficult things to learn is to take the far-off bird, and not the easy one, first. By taking the latter with first barrel the former often becomes impossible, and it is just the same with retrievers. If you send them off amongst dead game, they must be allowed to pick it up, although you can see it. A contrary practice is very useful sometimes, and it is easy to teach a retriever to neglect the dead for the wounded *always*; but this "higher education" is extremely awkward in thick cover, like long heather or turnips, where the quite dead birds are most often lost.

A case in point occurs. Mr. A. T. Williams' Don of Gerwn won the retriever trials very comfortably in 1904, when the author was one of the three judges. There is no doubt that he is very smart on a running bird in covert, or out, and he knows it, and likes the game amazingly. But in 1905 he carried his preferences too far; for once, at least, and probably on several ocasions, he found, and made no sign of it when sent for dead birds, but went on hunting for the runner that was not. He had been scolded off dead birds, and thus, on one occasion, he was seen by a spectator to turn over the

dead wing of the only bird down and go on hunting, as if his master only wanted his services for the lively runner. As the judges did not see this performance, Don had the discredit of having his eye wiped on very easy birds twice. Probably if they had known all about it, there would have been no other course open to them; for, after all, the "higher education" must stop short at teaching the neglect of retrieving to the retriever.

It is a great but not uncommon mistake to confuse bustle and excitement with courage and love of hunting. No dog should have less excitement or more courage than the retriever. Excitement is so easily recognised that little need be said of it, except that it is probably a near relative of nerves, and a retriever should appear to have no nerves and no excitement. He should be able to stand still, to lie still, or to sit still, in the presence of any quantity of wounded or dead ground game or winged birds. The standing still is the most difficult of the three. At the same time, the more interest a retriever takes in all that is going on the better he is sure to be, provided he is not excitable. Probably no dog takes more interest than a pointer, standing like a statue and dropping as the game rises. He may be excited as he does this, but the majority are not, and a retriever should be no more so. The pointer watches the game go away, but as he does so he sinks to the earth, and the retriever may be just as interested without jumping about or jerking his head in all directions in turn. A good retriever appears to be thinking, and when a dog is noticed to take his gaze off the bird he has been watching at every new arrival, or new fall, of game, he usually has not much stability. He is sure to turn out flighty, and that is a very bad quality—the outcome of excitement. The determination to hunt can exist without any excitement, can grow on what it feeds on, and does not require the assistance of blood to increase it. This is a very important thing to know, because an old idea was that setters and pointers must be allowed to chase game to give them a love of hunting. Some of them may require it; others will increase their love of hunting every

time they go out, although they have never been allowed to chase, and in spite of the fact that in the spring no game has ever been killed over them. Some retrievers have had this love of hunting also; but a great many, on the contrary, seem to depend on the excitement they get for the will to hunt. The latter are the most difficult to break, and the least valuable when they are broken.

The qualities that must be hereditary in retrievers are that one just described—soft mouth, and to some extent "nose." The last-named is not as certainly hereditary as the others, although it is quite as important. The author is not prepared to maintain that an excitable retriever having these last-mentioned qualities is always a bad one, or that excitement cannot be used as a substitute for natural love of hunting in the breaking of a retriever, but this process is intended to restrain excitement, so that the simultaneous encouragement of it makes the task a conflict of intention.

It is said that the business of catching wounded game makes a retriever more apt to run in than a pointer or setter, but the author has had several good retrieving setters that did not run in, so that the difference in breaking is much more likely to arise from temperament than from duties.

It is very easy to make retrievers steady to heel. For this purpose some people keep cut-wing pheasants for them to retrieve, and Belgian hare rabbits for them to look at. The lessons are useful, but whether use does not breed contempt is doubtful. The author would expect a dog trained to retrieve tame pheasants to become careless, and one that constantly saw Belgian hare rabbits to be well behaved until temptation arose. Retrievers that have sense often get very cunning: one the author had did not start to run in until he was five years old, and then he did it deliberately, and *not* from excitement. The proof was that he would not move unless he saw a hare was hit, then he went instantly, and would take his whipping as if, deserving it, he did not mind.

What do dogs think of us when we restrain them from catching the very things we go out to catch? More proof was forth-

THE HON. A. HOLLAND HIBBERT'S KENNEL OF LABRADOR RETRIEVERS, 1901

MR. A. T. WILLIAMS' DON OF GERWN (LIVER COLOURED)

MR. LEWIS WIGAN'S SWEEP OF GLENDARUEL (BLACK)

coming that it was determination and not excitement that made this old dog run in. When a cord was put on him, he would not move under similar circumstances. He was eventually cured, but it was a tough job, and was not done by cord or whip-cord.

Forty years ago the curly-coated dogs were the best workers, and one could make sure of getting good dogs regularly. For instance, about that time the author bought a brace of curly puppies from Mr. Gorse, of Radcliffe-on-Trent, then the most noted exhibitor of show dogs. Both took to work naturally and quickly, and could in their first season be trusted to get runners in turnip-fields of 100 acres each. Ten years later, the author bought one of the late Mr. Shirley's flat-coated heavy sort, but, although no trouble to break, it was heavy in mind and body. Mr. Shirley entered the own brother of this dog at the field trials at Sleaford; there was no other competitor for the prize. Had there been another entry, it is impossible that Mr. Shirley could have won, for a more lumbering and clumsy performance was never seen, although the task set was only that of picking up a dead bird and not a runner. But Mr. Shirley improved the next generation considerably. He had a very handsome dog to which the author was anxious to raise some puppies. With this object in view, an exchange was made for a defeated bitch called Jenny, then belonging to Mr. Gorse, before mentioned. He took a second prize Birmingham winner of the author's breeding in exchange. But Mr. Shirley objected to the breeding programme, so that another course had to be adopted, and Jenny raised some first-rate working dogs. Then she was disposed of by the author to the late Mr. Shirley, and by him bred to the dog which had been denied to her when the author's property. Her name was changed from "Jenny" to "Wisdom," and she became the founder of the Wiseacre family of show retrievers. She presented them with those long heads physically that some people declare are far from "long" figuratively. Wisdom, or Jenny, herself was certainly a fool, and the origin of her long and narrow refined head was probably what is known as a "sport," for it was not to be seen on any other

retriever of that time. However, she had a good nose and a tender mouth, and is important because probably all the show flat-coated dogs are descended from her.

All the public retriever trials in the field have not been failures like that at Sleaford, previously mentioned. But they have only become popular with show men quite recently. The latter have very wisely concluded that if they could not snuff out the trials that so frequently exhibited handsome dogs in a poor light, the next best thing to be done was to capture them. In order to do this, a very large number of entries have been made, and as the stake is necessarily limited (20 was the number), this had the effect of keeping out most outsiders.

Thus at the 1905 trial there were 39 nominations, only 20 of which were accepted, and these were made up of 15 flat-coated dogs, one Norfolk retriever, two Labrador retrievers, and two brown or liver-coloured dogs, one of which, at least, was not of the dog-show strain in most of his removes.

By this plan the show flat-coated breed has come to the extreme front for the first time in the history of the field trials. Probably it will be interesting briefly to enumerate the principal features of retriever trials. Nobody ought to be able to do it better than the author, for he is the only man who has seen them all. The first was a very modest effort attached to the 1870 autumn shooting trials of pointers and setters, held at Vaynol Park, which fine property the late Mr. Assheton-Smith had just before inherited. The following year, at the same trials, there were two stakes for these dogs. The author hunted a puppy which was quite good on wounded partridges, but the very worst possible retriever on a wounded hare. The first thing he was set to do was to get a wounded "squarnog," as a hare is called in Welsh. Strange to say, on the fine rushy, damp fields of Vaynol, the expected wild-goose chase came off, and the *useless* hare retriever came back with the spoils of victory. A retriever, possibly belonging to Mr. Lloyd Price, was entered at the same time by the late Mr. Thomas Ellis of Bala, for the aged dog stake, and won

very easily. The "Devil" had been obviously named for his looks. He was a curly sandy-brown, with whiskers like an otter hound. His victory reached the ears of the Welsh Church, and caused remonstrance against taking in vain names of potent powers. This had so much effect on the Welsh squire, that the following year he entered a son of the Devil and called it "Country Rector," possibly thereby avoiding the danger he had been cautioned against. That year it was clear once more that the show beauties were out-classed, and probably that was the reason why, when the Vaynol ground was no longer available, no other trials except the Sleaford failures were instituted for thirty years, or until those of the Retriever Society, which are now held annually. These began about the opening of the new century, and appear likely to see it out. But the first meeting under it was a failure. The winning dog was either very old or very slow, and it was not until the following year that any smart work was seen. This was done by Mr. Abbott's Rust, whose name explains her colour and appearance; but she did some brilliant work, especially when she was set to wipe the eye of one which appeared to have a good chance until she had failed at a running pheasant, one that gave Rust no trouble whatever ten minutes later, and with so much the worse chance. Rust on that occasion was the only dog present that either by pedigree or reversion went back to the old race of retrievers. This was reminiscent of the "Devil" triumph, and was far from encouraging to the beauty men. The following season Rust was again out, but far too fat and sleek to do herself justice, and she was beaten by the life of idleness she had been leading as a hearth-dog, and also by a very nice black bitch with some white upon it, belonging to the late Mr. Charles Eley, whose nephew, Mr. C. C. Eley, had taken second with a nice-looking black in Rust's year. Three Messrs. Eley were in the field for honours in the following years, and by the assistance of Satanella, a bitch without known pedigree, and Sandiway Major (by Wimpole Peter) they headed the working division. Sandiway Major was a triumph for the

show pedigree, as his sire was a Champion; but it was noticed that Major was a very distinct reversion to the old wavy-coated sort, for he was quite as much a curly as a flat coated one. He had been purchased out of one of Mr. George Davies' annual retriever sales at Aldridge's, and his work was good although perhaps not brilliant. This was not all that the show men could desire, and the following year another sandy liver-coloured dog, named Mr. A. T. Williams' Don o' Gerwn, easily won first. This dog was a son of that Rust spoken of before, and his sire was a cream-coloured dog of Lord Tweedmouth's strain—even more of a facer for the believers in exhibition dogs. But on this occasion another son of Wimpole Peter was third, and in 1905 turned the tables on Don of Gerwn. This was a handsome but somewhat slow dog belonging to Colonel Cotes of Pitchford. Don put himself out of court by not condescending to notice dead game, and hunting on the principle of "nothing but runners attended to." The Pitchford dog is descended from a very old working strain, which first figured in public when one of them appeared in the pages of the *Sporting Magazine* about the year Queen Victoria came to the throne. But, as a son of Wimpole Peter won the stake, and three sons of Horton Rector were high up in it, the exhibition division has every right to be pleased with its first unalloyed triumph. Mr. Allan Shuter, as the owner of the living Rector, has even more reason to be pleased than Mr. Radcliffe Cooke, as sometime owner of the now dead Peter. But Mr. Shuter's own entry was not at all what was wanted, for he was too big, too lumbering in body, and not particularly nimble in mind. Mr. Remnant has come near winning first on various occasions, and may be looked upon as a sportsman likely to improve the breed, by the neglect of beauty spots and selection for the fittest, as also very decidedly may be Mr. C. C. Eley, Major Eley his brother, and their cousin, Captain Eley, and Mr. G. R. Davies. Captain Harding, too, in Salop, has the right sort, and his Almington Merlin has had bad luck, or another Wimpole Peter would have come to the front.

That these retriever trials are doing good, in starting breeders who are trying to correct the working faults of the various breeds, is obvious, and with the public spirit exhibited by the late Mr. Assheton-Smith future sportsmen will assuredly associate the names of Mr. B. J. Warwick, Mr. C. C. Eley, and Mr. William Arkwright, not only as founders of the Retriever Society, but also as finders of the game on which the dogs have been tried.

Everybody who is acquainted with the average dogs seen at shooting parties, and has the advantage of ever having seen a really good one, will know how very necessary was some such move as these field trials. It often has been said that all the retrievers could do was to pick up game the men could see. It has become fashionable to demand a no-slip retriever—that is, one that will not run in to retrieve until ordered to do so. Perhaps it has been the readiness with which such dogs have sold that has caused breakers to prefer the slugs, as being the most easily controlled, and the least likely to be returned by purchasers as wild. Whatever has done it, the real game-loving instinct is much weakened since the time when a retriever was a working dog or nothing; but it appears to survive in a modified degree, which may assuredly be strengthened by selection.

It has been previously stated that the waiting until drives are over makes the retrievers work harder than of old, but this does not apply to the hardest of all work—that is, covert shooting; for this has been largely "driving" ever since retrievers were introduced, if it can be said that they ever were introduced. This point is rather doubtful, because the curly retriever is nothing more than an altered edition of the old English water-dog, which variety used to do wildfowler's duty, with a white leg or two, a white chest and a short tail, which had probably been cut like those of other spaniels. The first retriever the author shot over was entirely of this description, stern and all, except that she was all black, or so nearly whole-coloured that no white upon her can be remembered. This was about 1860, and a son of this "missing link" was particularly smart, and had so good a mouth, that on one occasion, when he annexed a hen sitting

on her nest, and carried her half a mile, she was returned to her treasures and sat upon them, none the worse for her involuntary excursion into the next parish. That calls to mind the frequently made statement that it is wrong to give dogs hard things to retrieve. The idea is that it teaches them to bite and to be hard-mouthed. That is an entire mistake, and this dog, like many another, was often made to retrieve stones, and to prove whether he bit them he was occasionally sent back for hen's eggs, but never broke one.

It is said, too, that the old dogs were lumbering, and so no doubt the Newfoundland type of wavy-coated dogs were, but this hen-and-egg carrier, like his mother, was active enough. He was not steady to heel, but was as sharp as a lurcher, and in cover it was difficult in his presence to miss a rabbit. No wounded one would get to its hole, and a good many that were not wounded were nevertheless retrieved and duly credited to the shooter. Now it is considered a strain on the breaking and a temptation to the mouth of a retriever to trust him with ground game in his first season. Although this particular dog was never broken to stop at heel, such rules, if they existed then, were more honoured by the breach than the keeping, and the dogs were mostly as steady and as soft-mouthed as any now.

The author has used a retriever often with a team of wild spaniels, and constantly with setters and pointers, without any running in of broken dogs, except in the cases already mentioned, and these are the highest trials of the steadiness of retrievers. In hunting a brace of young setters there is obviously no time to argue with a retriever, not even with a shooting-boot, and the author has had no trouble, as a rule, to make his retrievers conspicuous only by their invisibility behind, until they were called upon for action.

One great dog man makes his retrievers "back" when his dogs point. But pointing and setting dogs take no notice, and do not break in, when they are in the habit of looking upon the retriever as a part of the gun. It may be, however, that when black pointers are used a backer might mistake a retriever for

a drawing pointer, and be thus led into error; and if so, this is a serious objection to black and black-and-tan index dogs.

The worst cross the author ever made was with Zelstone. Although not a large dog, he was said to be a pure bred Newfoundland. He was a flat-coated retriever Champion, and may have been himself a good worker; but he ruined the working qualities of the descendants of Jenny above mentioned, and brought the author's strain of them to an end. Consequently, it is suggested that the Newfoundland is the type to breed out of the flat coats.

Breaking the Retriever

It is said that the way to have a perfect dog is to let it live with you, but it seems to be an excellent way to teach the dog to obey only when he likes, for if his master insists on obedience other people who *will* take an interest in a nice dog, will pet, spoil, order, and coax by turns. The collie is put forward as the most wonderful exhibition of dog breaking, but the author has rarely seen a collie take the order to come to heel, or to go home, when a stranger approaches the shepherd's house. The good sheep-dog has a duty to perform that he likes, and he does it well, but ask him to do anything besides, and he objects, and gets his way. The spaniel's business is the most taxing of all, and requires the best breaking, except when the retriever is broken to do spaniel's duty as well as his own, as he can. That is to say, he can find live rabbits in their seats and turn them out to the gun, and stand still as they go. This is far more of a tax on any dog than steadiness in pointing, when the breaker turns out the pointed game. The turning out often amounts to an attempt to catch a rabbit in its seat; and the instantaneous stop when the creature moves is, as nearly as may be, the exercise of the savage impulse with the civilised control in mid career.

Perfect hand breaking of the retriever includes fetching and finding inanimate objects, dropping to order, remaining down for any length of time, coming to order, hunting in any direction indicated by the breaker, not only to right and left as desired, but far or near as bidden. All these teachings will come naturally

to a man fond of dogs, just as a nurse fond of children will make them do anything without any book of rules. Consequently, the only point necessary to insist upon is the utmost quickness of obedience in all things. This is got by surprise orders at moments and in situations when the dog cannot help but obey, and by an economy of orders, so that the pupil never gets tired. The quickness in returning with a retrieved object is usually learnt by means of the breaker starting to run away as soon as the object is lifted. By means of this trick, and never boring the pupil with too much work in his play-time, as going out with his breaker should be to him, any dog can be taught to return on the instant; and a good education in this point has much influence on a retriever's softness of mouth. By this coaching he will be brought to do things instinctively, and when he comes to game he will then have no time to stop to select the best grasp, but he will come at full gallop, whatever his first hold of his game may be, and when this is the case he never will grow hard-mouthed. Consequently, your hand breaking goes *half-way* to make the mouth.

Entering on Game

It is said to be a good way to show a retriever heaps of game running about while he is at heel. No doubt this is true, but not before he has learnt to retrieve running game. To make a retriever steady before he wants to be wild is easy enough; but it is not teaching self-control, and is educating the dog to *ignore* game just as he should sheep. Consequently, it is best, as soon as the young dog is perfectly hand broken, at six or eight months old, to give him some line hunting after living game. This will increase his fondness of hunting, and give him an inclination to go for all the game he sees, so that he will gain self-control with every head of game he does not chase.

The author used to believe that a drag was good exercise in line hunting: it may serve to start a puppy, but he will hunt the man and not the dead game. There are objections to most methods of teaching rode hunting, but the author's plan serves

at least three useful purposes. First of all, and most important, is the use of a bird that is not easily bitten or hurt, so that no damage is done to the dog's mouth, or to the tame and wing-cut wild duck, for this is the bird used. The duck is taken away from its pond, and turned down in a meadow, when it will head towards its home, creeping as much out of sight as possible. In the grass it will prove very easy to rode up to, and that is wanted for a young dog. Later it can be made quite difficult enough over fallow, or anywhere, by giving lots of law. Then in a shallow pond the duck is an education to the water-dog. Almost every dog will take water provided he can touch bottom and there be a match for a duck, but many dogs object to swimming. Nevertheless, if there is only one small spot in the pond which the retriever cannot wade, the duck will find this out very quickly, and will, by degrees, tempt in the dog out of his depth. He will soon learn to dive after the duck, too, and in fact become a first-rate water-dog without having a shot fired over him.

The duck let off in a turnip-field will be a great lesson, for at first turnip leaves and the innumerable small birds and other creatures in turnips, especially rabbits and thrushes before the shooting season, bother a youngster even more than the absence of much scent of the game to be retrieved.

After this course the puppy will be quite ready to take the field, and will probably get the first running partridge or grouse he is sent after, and do it as quickly and well as an old dog.

The author never made his retrievers drop to shot, but no doubt it steadies the nervous and keeps down excitement to do it. If it is approved, the hand-breaking time is best for its teaching, and it should become habit, as if instinctive. Then, in the field, it can gradually be forgotten; but long after a dog ceases to drop to shot he will retain an impulse to do so, and as this will be an exactly contrary impulse to that of running in, it will save many a whipping. However, a dog is not broken if he is only safe when lying down; for it is really putting him out of temptation.

THE LABRADOR RETRIEVER

RECENTLY there has been a great revival in numbers of the close and thick coated, featherless dogs called Labrador retrievers. Their ancestors, or some of them, were, as the name implies, originally imported from Labrador. They were not Newfoundlands when first brought over any more than they are now. But it is rather difficult to say which sportsmen had one sort and which the other when both first began to be used for sporting purposes, or to be crossed with setters and water spaniels, to make the ancestors of our present races of retrievers. The Labrador, as we know him now, probably had no setter or spaniel for ancestor, and there is every reason to believe that the Lord Malmesbury of the *Diary*, and later the Duke of Buccleuch and Sir R. Graham's family, maintained the breed in its original form. But probably in-breeding told the usual story: a cross had to be resorted to, because the dogs were getting soft, and one cross was introduced at Netherby, and of all strains to select for a cross one would think that chosen the worst. It was a keeper's night-dog that was chosen.

It has been said that Mr. Shirley's original strain and also Zelstone of Mr. Farquharson's strain were descended from Labradors. This is probably not quite correct. Their coats did not indicate this blood, but that of the Newfoundland.

The latter's was always a long, loose, wavy coat with more or less tendency to feather; the Labrador had no more feather than a pointer, but a thick close coat with little or no wave. There is no doubt the purest blood has come from the Duke of Buccleuch's kennel of late years, but the author would not

COL. C. J. COTES AND PITCHFORD MARSHAL, WITH HIS BREAKER HARRY DOWNES

THE HON. A. HOLLAND HIBBERT AND MUNDEN SINGLE

like to affirm that crossings between that and the Netherby kennel did not introduce the night-dog cross into the whole of the race. The short round heads and wide jaw-bones in these dogs seem to bear physical witness to ancestry competent to take care of itself. This statement of a fact is not intended to carry a slur with it, for it may be said that the big shooter and enthusiastic dog man who found out these particulars, and gave me the modern history of the breed, has himself used the Labrador recently as a revival to his flat-coated strain of retrievers.

Judged from the point of view of an admirer of a good flat-coated retriever, the present race of Labrador dogs appear common. But it would be altogether wrong to say definitely that they are so. Make and shape is very much a question of fashion and taste, and when a certain section of the population can admire the bulldog it is not within the province of anybody to lay down the law as to what is canine beauty. At any rate, they have one great point seldom observed in the flat-coated dogs. Their loins are usually strong enough to enable them to be active. A dog with a loin too small for his weight may be fast, but he never can be active, and as one might expect from this formation the Labradors are remarkably quick in their movements.

Mr. Holland Hibbert has a big kennel of these dogs, and has exhibited their work at the retriever trials two seasons. His Munden Single was given first beauty prize at the 1905 trials, and was placed for looks over the heads of some very good specimens of the flat-coated sort. Still, it is not supposed that breeders of the flat-coated sort are likely to try to breed their dogs to the model then set up; and the author has always regretted the giving of beauty prizes at field trials. We go to these meetings to learn from Nature what form she chooses shall embrace and contain her best internal handiwork. Having found that out with much expenditure of time and trouble, we must needs read Nature a lecture before we separate, and instruct her what form she *ought to have chosen* for her best. We do not hold a mirror, but a model, up to Nature, and seem

surprised she does not adopt the work of our creations as her best. This is surely all wrong, for it was obviously the selection of the best workers for hundreds of generations that evolved the forms that we call setters, pointers, and spaniels, and made them different from any other dogs, but did *not* make them like show dogs of the present time. If the latter had been the most fit form for the work to be done, it would assuredly have been evolved by the selection of the best workers.

On these grounds, it seems to be unwise to place on a pedestal for imitation and admiration the Labrador that was beaten.

If Darwinism has a spark of truth in it, selection of the fittest for the acts of life has evolved every form in the world except just the trivialities, the abnormalities, and distortions that man has bred as a fancy, not to improve, but only to alter. Fancy poultry has been one of the chief fields for fancy operations in breeding, but, amongst all the new forms and characters produced, there is only one that would survive a state of nature for a couple of generations. That one is the old English game fowl, which was evolved, not by fancy selection, but by fighting—that is, by the most severe and discriminating form of selection and survival of the fittest.

Just in the same way will the forms of gun-dogs take care of themselves, provided selection of the fittest for work is severe enough. The pointer and setter trials have neglected stamina. If they had not done so, our working setters would have had backs like iron bars, as theirs have in America, where stamina has been the first consideration at field trials.

When Mr. Holland Hibbert ran Munden Single, the Labrador, in the 1904 retriever trials, there is not much doubt she would have been high up in the prize list had it not been that the last runner she got was brought back dead. It was a wing-tipped cock pheasant that Single roded out and then chased. But the cock could almost beat the dog by the help of its wings, and no doubt the Labrador was

MR. M. PORTAL'S LABRADOR FLAPPER, WINNER OF SECOND AT THE TWO PRINCIPAL RETRIEVER TRAILS IN 1906 AND FIRST AT THE KENNEL CLUB TRIALS IN 1907. FLAPPER IS SIRE OF DUNGAVEL PHŒBE, WINNER OF THE FIRST CHAMPION RETRIEVER TRIALS; JANUARY, 1909

THE DUCHESS OF HAMILTON'S LABRADOR DUNGAVEL JUNO, WINNER OF SECOND AT BOTH THE PRINCIPAL RETRIEVER TRIALS IN 1907. JUNO IS DAM OF DUNGAVEL PHŒBE, WINNER OF THE FIRST CHAMPION RETRIEVER TRIAL: JANUARY, 1909

pretty much blown when she got hold. Then she had to cross a brook to get back, and it is likely enough that a stumble, or perhaps jumping against the bank, led to the pinching of the bird. However, excuses are not admitted in public competitions, and indeed none was made. In 1905, Single appeared to be quite tender in the mouth, and although she is admirably broken, and has no excitement or nervousness, but lots of love of the game, she was not as fortunate in her opportunities as had been the case the year before, and got no prize for work although she has lots of merit. Another Labrador at this meeting got a certificate of merit, so that, as only three entries have been made all told at retriever trials, the breed has taken a much better position with spectators than is indicated by its want of success in gaining stake money.

The private character of the breed for work is very good indeed, although *some* of them are reported to turn out rather hard in the mouth. But then the same thing can be said for every breed of retrievers. The author remembers Labrador retrievers forty years ago. The pair he first knew were kept as pets by a rural parson who did not shoot. It was commonly reported that either of these dogs would dive to the bottom of a well and fetch up a fourpenny-piece; but this was hearsay evidence, and was never seen by the present witness. However, these dogs had just the coat of the present Labradors, and distinctly not that of the Newfoundland. The only dog of the sort that the author ever had was death on cats, but this accomplishment did not make him hard-mouthed with game, as it probably would nine retrievers out of ten.

[Since the above was written, the 1906 retriever trials have passed, but as the winners all failed with runners the author finds nothing to add to his general survey.]

SPANIELS

THE chief of the spaniels are the setters, but as they no longer claim connection at one end of the group, and as the King Charles and Blenheim spaniels are no longer granted the status of gun-dogs at the other extremity of it, the number of breeds is limited in fact, but unduly enlarged by Stud Book classification.

The only sporting breeds in reality, although there are more nominally, are the Irish water spaniel, used as a retriever, the English water spaniel, or half-breds of that almost extinct race, of which the curly retriever is a survival, but with a cross; the clumber, the English springer, the Welsh springer, and the cocker. Field and Sussex spaniels seem to have gone off in work, although they are said to have come on in appearance. There was an outcry that the show field spaniels were bred out of true proportion, and there were reports of the same dogs being observed in two different parishes at the same time. The drain-pipe order of body is not quite as exaggerated as it was before the reformation that occurred about 1898, but the black field spaniels and the Sussex dogs of the shows even now tend to a Dachshund formation. Still, the former are as handsome as dogs can be, and are in every sense spaniels to look at, although mostly too long and heavy for work, and suggesting hound cross by the high angle at which they carry their sterns. The truest bred spaniels when at work carry the stern at an angle of about 45 degrees with the earth, pointing downwards, and not much higher in kennel; but the majority of show spaniels carry the stern above the level of the back, and consequently

suggest hound blood. Besides this fault, they have others from the shooter's point of view. Their ears are too long, and they could not work in the feather they constantly carry. It is strange that the form of these spaniels should have been so grotesquely altered by selection for exhibition, and yet the old formations of clumbers, springers, and cockers have remained very much what they always have been. This is the more surprising, having regard to the fact that Sussex, black field, and cocker spaniels are now much of the same blood. The real cockers, which were at one time called King Charles spaniels, have become lap-dogs, and the smaller specimens of the other races have taken their places. And yet some cockers are distinctly the right shape and not too long, whereas the other exhibition races, named above as too long, are less workmen than the cockers although so much bigger.

The black field spaniels appeal to me as dogs. The refinement of their heads and the beauty of their coats go nearer to a success by man in producing a working race by mental design and physical measurement than specimens of any other show dogs, whereas the short heads of the modern Sussex spaniel look to contain no sense, and the work seen at field trials must have been very disappointing to the owners of both kinds. It has been a puzzle to the author how men who use the gun at all can be satisfied with such work. However, people will often sacrifice sport for a hobby.

At a period when science assents to the possibility, although not the probability, of raising up a pure breed in spite of the introduction of a cross of blood, and when the Irish wolfhound has been created out of crosses with the German boarhound and the Scotch deer-hound, it is not wonderful that a faint trace of Sussex spaniel blood in a pedigree is considered enough to warrant inclusion under that heading in the Stud Book. But really it is not known what the original Sussex spaniels were like. It does not follow that because all that is known is gathered from Rosehill, that the dogs there were of the old Sussex strain, or that the information given about them was reliable.

It is not of much importance to sportsmen in any case, except that it has a bearing on the whole ancestry of the spaniel. So far as the author knows, whole-coloured liver, according to the records, is not a spaniel colour at all. On the other hand, whole colours were very much appreciated as long ago as 1776, but we do not hear of any except black-and-tan and red dogs—that is, of the colour of a "bright chestnut horse." This colour is still to be seen in America, where it is the most common in work, but the author has only heard of it, and never seen it in England.

It is only natural to suppose that if spaniels and setters were originally the same dog they were also of the same colour, and we hear of no ancient whole liver-coloured race of either sort. There is little doubt that the latter is a modern creation, and the colour is easily produced. If a liver-and-white dog of any breed is crossed with a whole-coloured one of any sort or colour, some of the produce will generally come whole liver-coloured. Therefore, may we not assume that the first liver-coloured setters and spaniels were produced by crossing the black-and-tans or the reds of either breed with the liver-and-white water spaniels? The author has previously stated his belief that colour is greatly indicative of blood. A few years ago there was a race of liver-and-white setters in the North of England, all of which had a top-knot formed of hair longer than the rest, and in one specimen the author noticed a peculiarity distinct from anything noticed in other breeds. It was a ticked liver-and-white in colour, and wherever the hair was of that shade it was also distinctly longer than the white in which it was set, so that the appearance was that of a lot of little tassels.

Spaniels that are liver-and-white colour will generally be found to carry more feather on their ears than any others in the same litters, and many of them have curly feather there, when their differently marked brothers and sisters have straight hair to the ear tips. If it is true, therefore, that colour and hair is indicative of blood, we have to believe in either the pointer or the water spaniel cross wherever liver colour is found in setters or spaniels, although the cross may be several centuries old.

RED AND WHITE FIELD TRIAL WELSH SPRINGER SPANIELS BELONGING TO MR. A. T. WILLIAMS

LD TRIAL ENGLISH SPRINGER SPANIELS OF THE LIVER AND WHITE (AQUALATE) BREED BELONGING TO MR. C. C. EVERSFIELD

MR. EVERSFIELD'S FIELD TRIAL WINNING ENGLISH SPRINGER SPANIELS OF A LIVER AND WHITE BREED KEPT FOR WORK ALONE IN THE FAMILY OF THE BOUGHEYS OF AQUALATE FOR A HUNDRED YEARS

Perhaps the best working breed of spaniels now is that liver-and-white race that has been for 100 years in the family of the late Sir Thomas Boughey, once Master of the Albrighton hounds. But more evidence is to be found that the Sussex spaniels were not originally liver-coloured. This is the fact that to the present time those with any Rosehill blood occasionally produce what is called a sandy puppy, which is practically the colour original to the Irish setter, the spaniel as described by the *Suffolk Sportsman* in 1776, and the spaniel as now found in America.

From the shooter's standpoint the source of origin does not matter much. But what matters is how the various present-day races or crosses can work.

Since the establishment of field trials for spaniels, every sort has been seen in public work, and their positions have been as clearly defined as any sportsman wanting information could desire. At first a clumber called Beechgrove Bee distanced all competitors. She was light-made for her race, and had a narrow head and rather pointed nose.

Next to her to assume command was Mr. Gardner's Tring, a liver-and-white springer; and about the same time a curly dog called Lucky Shot did very well, but was rather short of nose. He has since been called an English water spaniel, but it is doubtful whether he was less of a springer, or Norfolk spaniel, than Tring, except by reversion a little more to the curly ancestors of both. But all these dogs were thrown into the shade by Mr. Eversfield's black dog with a white chest, named Nimrod, which carried all before him at the 1904 trials, and would probably have done the same again in 1905 had it not been for the presence of a liver-and-white dog of Sir Thomas Boughey's breeding, also belonging to Mr. Eversfield. The spaniels above named have stood out from all competitors at the time of their prime, and none others have done so. Their type of formation has all been the same except in the case of the clumber. That is, they have been neither long nor low, but short-backed and active, with legs at least as long as the dogs were deep through the heart. Although one of them

was a black in colour, he was most removed from the dog-show black field spaniels and all of them, and may safely be called by the re-created term "springer."

But meantime there have been other good although not remarkable dogs at the field trials. Mr. Eversfield has had many, Mr. Alexander has always been hard to beat, Mr. Phillips has had some excellent clumbers, as also has Mr. Winton Smith, besides Beechgrove Bee already spoken of, and Mr. B. J. Warwick has had good dogs. Mr. A. T. Williams, of Neath, has had good teams of red-and-white springers, which have, as far as the shows are concerned, monopolised the classes for this one colour. It is said to have been bred true to this red-and-white mixture for many years in a few families in South Wales. At the same time, there were other families in South Wales which bred spaniels of many colours for the woodcocks and the very stiff coverts of the South-West corner, or Little England beyond Wales, as it was called. Thirty-five years ago the author shot over black-and-white, liver-and-white, and red-and-white dogs, all from the same litters, and these were the most determined hunters and the quickest stayers then known. But as the author knows of none now representative of them except the red-and-white Welsh springers, these may be taken for the type, and they are undoubted hard workers and quite careless of bramble and gorse.

Retrieving spaniels have been very highly spoken of by as practical big bag-makers as the late Sir Fred Milbank, who used them for grouse driving. All the breeds above named retrieve well except the Welsh springers, none of which have been broken with that intention, so far as is known to the author. Mr. Williams only works spaniels in coverts and in teams, and believes that a retriever proper is the best for his own work.

It is not possible to have several spaniels seeking dead at one time unless they are all within sight; but there is no fear of tearing the game when the dogs can be seen, as they can be upon a moor, or in open cover, or in fields.

The difference of opinion between sportsmen as to which

are the better dogs for retrieving probably arises because of mental reservations of those who express opinions. The advocates of spaniels are probably speaking of a team, and those who sing the praises of retrievers are thinking of one retriever against one spaniel. Except upon the line of a runner, a single retriever is usually much better than a single spaniel on any ground, and although the spaniel is quicker on the actual line of the runner, he usually takes much longer than the retriever to find the fall of the bird or the place to start from. Altogether, the retriever is preferable, unless a team of retrieving spaniels can be worked at the same time, and even then several retrievers will probably be as satisfactory, except that they take up more room in traps and motor cars.

The best spaniel for all-round purposes is the English springer; he is active, stays well, and can retrieve well. The clumber cannot be coupled with him, because he is not supposed to stay, and moreover he is as big as a retriever to get about country, and without being nearly as active. In the New Forest, where shooters are limited to a fixed number of dogs, nobody will look at a clumber; so that for heavy work a change of team, or dog, at lunch-time would probably be needed were clumbers relied upon. No such charge can be brought against either English or Welsh springers, but the cockers are only one remove better than toys, the field black spaniels, and the Sussex breeds.

Irish water spaniels have been mostly kept and altered for show, and the few that the author has seen at work of late years have been extremely moderate performers.

The Breaking of the Spaniel

The spaniel should be broken early. Eight months old is quite late enough to enter on game if good breaking is required, and all hand breaking should precede this entry, and should follow the lines proper both for retrievers and pointers as far as they apply to individual requirements.

If one has to allow dogs to "run in" and chase game, to

get up their keenness for hunting, it is a misfortune, and the task of breaking will become all the harder. In a good breed this encouragement will not be required. It is always hard to create opposites simultaneously, and to *make* a dog both bold and obedient.

The principal requirement in the hunting spaniel is nose, quickness, never going out of gun-shot, instant obedience, and bustling up game in a hurry without chasing it when it is up, dropping to shot, and retrieving dead and wounded game when told. It is a large order, and yet dogs that can do it all often make no more than £15 at auction, and sometimes less.

It is obvious that a well-bred spaniel will start hunting as soon as he is introduced to the smell of game, then his range must be taught either by using a line or by voice and whistle. In thick covert the former is not possible. The principal difficulty is to stop the puppy as soon as he has moved his game. Again, either voice or cord can be made to do the business, but probably a little of both will bring about the required education sooner than either by itself. The system should be to prevent the chase, not to punish for that which is instinctive in the pupil. Consequently, the quick obedience to voice spoken of as necessary for setters and pointers, becomes doubly so for spaniels, and they really ought to tumble over to voice or gun as if the latter had done it. But this instinctive obedience cannot be taught during entry upon game, and consequently until it is perfected the puppy is not fit to enter.

It is much more of a strain on the instinct of the spaniel to stop him when he is bustling up game than it is to stop the setter when game rises or runs away from his point. In one case restraint follows upon restraint, in the other it follows excitement let loose.

Retrieving should be taught the same way as for a retriever proper, and if it precedes the work of entering upon the finding of live game, the latter will be all the easier for the breaker.

Wild spaniels in very thick cover are of more use than a highly broken team. Where the covert is so thick that a worker of spaniels cannot get into the thick parts, his highly broken

FOUR OF THE TEAM OF FIVE SPANIELS WITH WHICH MR. JOHN P. GARDNER WON THE TEAM STAKE AT THE SPORTING SPANIEL SOCIETY'S MEETING NEAR MANSFIELD IN 1907

dogs will not go there either, because they have learnt to keep near to him. In this case, four or six couples of wild spaniels to hunt up wild pheasants, woodcock, and rabbits, make beautiful sport, but they usually need several whippers-in to keep them somewhere in the neighbourhood of the shooters.

A friend of the author's was once expatiating on the improved methods of pheasant shooting, and explaining that the last generation knew nothing of the charms and the art of killing driven birds, when, at that moment, wild spaniels on the hill above us flushed four cock pheasants, they came at us swerving through the trees down hill at a cannon-ball pace, and four shots did not touch a feather. Yet this was the old style of pheasant shooting—at least in that district, and it was on record there that the last generation were first-rate performers in covert and out. Amongst other birds they killed flighting duck and sometimes flighting teal also at night, all of which, including the down-hill rocketers from the spaniels on the hill-side, are out of all proportion harder to kill than the best birds that ever flew across the open and flat ground from one covert to another, however the latter have "sailed" and "curved" in their flights.

By mutual consent, after missing the cocks, we changed the subject of conversation.

It has been said that field trials have brought some good dogs to the front, and enabled those who go to trials to judge for themselves of the merits of individuals and of races; but they have also done injury in one direction. There may be differences of opinion amongst sportsmen on how spaniels should be judged at field trials, but there can be no question that the use of field trials as a mere show dog advertisement is misleading and objectionable. As these remarks are written, there is an advertisement of spaniels appearing in which it is stated that the owner's breed has won "800 field trial and show prizes." What the author knows of the breed is that upon one occasion they won a prize at a field trial,—a prize that was ear-marked for the breed,—and won it because competition was weak and limited. That they have won 799 show prizes

is not denied. But if this is the way to advertise show dogs, then the sooner field trials are dropped the better in the true interests of sport. In this direction lies the danger to sporting interests; and little differences about means and methods of judging are of *comparatively no importance.* A variety of judges have acted under a large variety of rules, and to the credit of the former, and in spite of the latter, the best dogs have nearly, or quite always, got the stakes. But there is also a tendency amongst judges to give the smaller prizes and certificates of merit because a dog has done no harm, although he may not have done any good.

If it is correct to absolutely disqualify a dog for ranging beyond gun-shot and for chasing game (and it must be so in the interests of sport), then, on the ground that every dog can be broken but not a tenth of them are worth breaking, it is also essential to disqualify a dog that cannot find game.

It is because the latter has not always been done that these remarks are necessary. The quantity of game left behind unfound by the dogs that have won minor prizes has surprised not only the author, but others also who have come to visit these trials once, *and no more.* On the other hand, the best winners have always been the best finders that passed the not very severe breaking standard, as indicated above, and that is obviously right.

For this 4th Edition a Stubbs portrait of a golden liver spaniel has been shown, to disprove of the contention that "liver" was no original setter or true spaniel colour. The author's suggestion was that in these breeds it traced to the old water-dog with his curly coat, to the dog which originated the curly retrievers, and possibly the Irish water spaniel. The Stubbs model had no trace of water spaniel, but was quite a good flat-coated springer. But in speaking of originating blood and colour the author was not thinking of the end of the eighteenth century, by which period there had been all sorts of admixtures of blood. In the chapter on setters another method of accounting for the colour is suggested—that is, by originating it as an exceptional blend between black and red.

GROUSE THAT LIE AND GROUSE THAT FLY

THE shooter who wants grouse driving and he who wishes for shooting over dogs are by no means best suited in the same districts. The distribution of grouse must be mentioned before any just estimation of the causes of the different manners, habits, and instincts of the grouse can be formed.

The birds have one special altitude which suits them best in each locality, but this particular altitude differs with latitude and longitude.

Where the grouse are best served by high altitudes is in the south-eastern border of their distribution. They are at home on the top of the Peak district of Derbyshire, and exist much lower down. Farther north and farther west their best moors are lower, and this goes on until in Caithness the best elevation for the grouse is only about 100 feet above sea-level, as it is also in Argyllshire. Over all the intermediate country, between parallel lines pointing north-east and south-west, the grouse are best served by an intermediate elevation of moorland decreasing towards the north-west. They exist in large numbers, but not the largest numbers, above and below this elevation. This is generally true, and although it would be easy to point to moors a few hundred feet out of the theoretical best elevation that are better than others exactly in it, there are then always local conditions that favour such moors, and these are not to be found on the moors in the better elevations on the same parallels. The moors of Dartmoor and the heaths of Norfolk are both on the same north-

east to south-west parallels. Probably neither of them are for the most part high enough to suit grouse in that latitude and longitude. It must be remembered that if red grouse are, as is believed to be the case, the same bird as the willow grouse, or rype, they are of Arctic origin, and, like other organisms of that origin, survive out of the Arctic regions only at certain higher altitudes as latitude decreases. The lower Dartmoor is obviously too low for them, but possibly places could be discovered on the moor where they would do well. The lower moors there are smothered with the bell heather (*erica*), and this is not the food of the grouse. The real "ling" (*calluna*) of the grouse food grows on Dartmoor much more scarcely, and although there is plenty for old grouse, it is not easy to see how chicks could get about to find enough of their natural food amongst what, to them, would be forests of useless vegetation—namely, the bell heather. On the South Wales moors the grouse are not very plentiful; but the species is better served in North Wales, which is on the same north-east by south-west parallel line as Yorkshire.

It is a curious fact that these parallels also supply an index to the wildness or otherwise of the grouse, but not exactly. It would be more nearly correct to say that this is true except so far as it is modified by insular conditions. What is meant is that the parallel lines hold good except as regard the islands where the grouse lie better than their north-westwardness would suggest from the behaviour of the grouse in the same parallels on the mainland.

It has been said that the wet climate makes birds lie: this is obviously wrong, because they do so in Caithness, which is the dryest county in Scotland by the statistics.

It has also lately been repeatedly said that the Gulf Stream makes them lie, but this also is surely wrong, because the one part most affected by the Gulf Stream is the Port Patrick promontory in Wigtonshire, where the author has found the grouse as wild as in Aberdeenshire. Yet in Arran and in Islay, but slightly to the north-west of this point, they lie like stones *all the year*. They do so also on the west coast of Argyllshire,

on that of Ross-shire, and in the whole of Sutherland- and Caithness-shires, and also in the Lews and that group, in Skye and in the Orkneys.

Elevation makes no difference to their instinctive habits, which are clearly in-bred in the birds, and whether in the same districts grouse are found at 2000 or at 100 feet above sea-level their instinctive habits will be always those of the district, and are not varied by hill and strath.

What, then, is it that makes some birds lie for security all the season, and others fly for security as soon as they can use their wings? It has been said that if you drive birds one year you will always have to drive them, because it alters their characters. The author held to that faith for years, but has lived to see the error of his imaginings. It is very natural to suppose, if you teach the parents to fly for life, that the children will inherit the same habit also. But although the author would be far from asserting, as some naturalists do, that life-acquired habits are *never* transmitted, he knows that they are not often transmitted, and thinks that the growing, or rather grown, wildness of Yorkshire grouse can be amply explained on the Darwinian theory of the survival and breeding of the fittest.

Early in the nineteenth century the celebrated Colonel Hawker found the grouse so wild that he took himself back to Hampshire, voting grouse in August a fraud. He only shot a few that sat better than the rest, which implied that all those that sat worse than the rest were saved for breeding. This natural selection of the fittest went on for another fifty years, and then people took to driving grouse because they could get them in large quantities no other way. That seems simple enough; fifty or one hundred generations of selection of the wildest for breeding, and of the youngest for the pot, made the Yorkshire grouse breed earlier and breed wilder birds than before.

There is a natural and obvious apparent difficulty in accepting this theory, but it is only apparent and not real It is this:—Why did not the grouse get wild in the same way and degree in the Highlands and the Islands and in Caithness-

shire? The reason why they did not is probably that the Yorkshire grouse began by being strong enough and early enough to all rise in a brood by the 12th of August. Consequently, the early broods were saved. The Caithness-shire grouse and those of the Lews were later, and never were all ready to rise together in a brood by the 12th of August, and consequently the most backward were saved, since both barrels would be discharged at those first up, and the crouchers escaped while the shot was being rammed home in the muzzle-loaders.

If this is the true explanation of the difference of habit of the birds, its root cause can be seen at a glance every autumn on the heather—that is to say, its root cause, when the shot gun was first used to kill grouse upon the wing, was in the state of the heather. The bloom of this plant indicates the period when it started to shoot, and that is a fortnight earlier in Yorkshire than in Caithness and the Lews. It may be three weeks, or even more, but it is at least a fortnight.

The starting to bloom has no influence directly on the grouse nesting, but the starting of the plant to shoot has; and therefore if the survival of the fittest theory is accepted, all the wildness of the south-eastern grouse, and the hiding habit, or natural instinct, of the north-western grouse is explained by the state of forwardness of vegetation in the districts two hundred years ago, which in all probability was relatively what it is now.

Of course, what will make wild grouse lie now has not much to do with the matter. Falcons will make them lie, eagles will generally make them fly, as also will ravens. The birds are not very discriminating either, and make mistakes, for they frequently lie well under an artificial kite, and fly away if they see a heron in the sky. Probably they mistake one for a peregrine and the other for an eagle. But there do not appear to be enough peregrines anywhere now to permanently affect the habits of grouse. Probably when there were lots of them all grouse did lie well; we know that they did so, even in October, in the Duke of Gordon's country in the time of Colonel

Thornton's tour in the Highlands, about 1803. But the peregrines have not ceased to exist merely in patches of country, and certainly not in the same degree as the south-east line of grouse distribution is remote or the reverse. It is clearly because of the falcons that the grouse acquired the habit of lying and hiding from danger in the first instance everywhere alike. That is not the question, but how it happened that when the danger ceased to exist in magnitude one lot of grouse preserved the ancient instinct and the other lot lost it.

Grouse that lie for protection are often spoken of as "tame," but this term hardly truly expresses the primitive instincts found in the grouse of Ireland and the west and north of Scotland. Grey-lag geese in Caithness, nine hundred and ninety-nine times in a thousand, will fly at the sight of man; but once, at least, a grey-lag was observed cowering under an artificial kite, and this was not because he was tamer than usual, but because he was more scared and more wild than ever before, or since—for he was shot.

Most shooters in Scotland have doubtless observed that a little bad weather sends a lot of old grouse on to the tops of the hills, not on the high ptarmigan tops, but on to the bare places on the hills immediately above heather slopes. There they would not dare to go if there were a few peregrines about, because on such ground they are at the long-winged hawk's mercy. It was not until between 1840 and 1860 that much headway was made in Scotland against the hawks, and it is quite probable that the grouse never would have acquired a taste for the "tops" if the peregrines had not been killed, and the present trouble about killing the old cocks would never have occurred in Scotland. This subject is referred to at greater length and in more aspects in the chapter dealing with grouse bags.

In Yorkshire, however, it seems obvious that the grouse were made wild by Act of Parliament—that is, by the fixing of a date for the opening of shooting which suited Scotland but did not suit Yorkshire at that time.

As everyone knows, there are doubts in the Highlands of

Scotland as to the best means of shooting a moor for the benefit of its next season's stock. From a conversation the author had in 1905 with Captain Tomasson, who is the most successful of preservers in Scotland by the almost exclusive driving method, the writer gathered that on one or two points Captain Tomasson could criticise some articles that the author had previously written, and do it in a manner to throw more light on the subject, and for this reason he asked the tenant of Hunthill if he would write a criticism of those articles, handling them in as severe a manner as possible. The latter very kindly consented, and the following letter is the result; but the ever-present want of space has not permitted more than an outline of his views, which more elaboration would make very much more interesting than this all too short letter is, or could be, from the nature of the case. In the next chapter the author has endeavoured to repeat the substance of the articles already referred to, in order that as much grouse lore as is practicable may be stored in this little work on so many shooting subjects. The articles referred to were entitled "The Difference of Effect in Driving Grouse in England and in Scotland," or some such title, and it was not sought to be proved that driving was bad for Scotland, but merely that whereas driving increased Yorkshire grouse by 800 or more per cent., it has not done anything for Scotland. This is not to prove it bad, but merely to suggest that what has been gained in one way has been lost in another. That partial driving has reduced disease in Scotland is not likely, because we find that it is no more prevalent in Caithness, where there is no driving, than in the Highlands where there is. Besides that, can we expect it to do so when it failed so lamentably in Yorkshire, which was much more "driven" in and before 1872 than Scotland is now, and yet this practice was followed there by an outbreak of disease in 1873 and 1874 that has never been paralleled since? The author's opinion is that bags made in these days truly indicate the stock of grouse; but when, in 1872, there were 10,600 grouse killed over dogs by three parties of two each on Glenbuchat, averaging 100 brace a day to each party

(a fact which the owner, Mr. Barclay, has been kind enough to give me), there must then have been enough grouse left to have doubled the bag had driving occurred afterwards. The birds would not lie to be shot then in the middle of September, as everyone knows.

It may be fairly asked, "What is the use of double numbers if you cannot shoot them?" But that raises a very broad issue, and what the author has in mind is that over-shooting now is far worse than want of attention was then. It is stated in a pamphlet issued by the Grouse Commission, that one acre of good young heather is enough to keep a covey of grouse for the season. As a matter of fact the moor is lucky when it rears half a grouse to the acre instead of a whole brood. In the author's belief there is no reason past human powers to remove, why the acre should not breed the brood instead of the half-grouse. In fact, he has taken up this question in order to draw attention not only to the fact that season's bags are smaller than they were in spite of improvements of all sorts, but to try and induce a search for a reason for this state of things in a contrary direction to that being taken. For this purpose he would refer possible readers to his chapter on "Game Birds' Diseases," and would also call to mind the very suggestive phase of wild life from Africa—namely, that when antelopes, buffalo, and zebra were in countless millions, nothing in the shape of disease retarded their increase, but as soon as they came to exist in isolation and small flocks, disease stepped in and well-nigh exterminated them. That the micro-organisms of some diseases are often present in the blood of the big game animals and do them *no* injury, although they may be injurious to other animals, is also very suggestive of what may be possible in the future on our grouse moors — that is, if the practice of devoting them exclusively to grouse is persisted in.

"WOODTHORPE, NOTTINGHAM
"*October 2nd*, 1906

"DEAR MR. BUCKELL,—You ask me what I think as to your views *re* grouse driving in Scotland, and the conversations

we had together. I do not like to attempt to criticise, as I agree with you in nearly everything.

"As far as I can see, the point is this, whether the introduction of driving has resulted in larger bags in Scotland than in previous years? The case that you so ably put forward and support with so many industriously collected facts and with such originality resolves itself into the statement that there are not now so many grouse in Scotland as there were in the years 1872 and 1888, which you rightly regard as the maximum seasons during the dogging period. I think the comparison is hardly a fair one, as of course you have taken the very best years in the memory of man. What my experience shows used to happen in the old years was that on these moors (many of them of much larger area than at present) very large stocks of grouse were left in favourable years, and these were augmented as the seasons went on till at the end of the seventh year or so there was undoubtedly a very large stock of grouse left. Big bags were made, but it was entirely hopeless with the means then at one's command to cope with those great hordes of grouse; then came the disease, and swept everything clean away. What we contend has been the principal advantage of driving in Scotland is that we are enabled to control the outbreaks of disease to a greater extent than formerly—that is, we kill by driving the older birds, leaving young and vigorous stock; that we are enabled to keep the birds within moderate dimensions; and that though we may not be able to have so many birds on our moors as in 1872 and 1888 (nor is it desirable), yet, taking the run of the seasons through, we kill more birds off our ground than was the case in previous years. The seasons average better, but they are not as they used to be in the old days—three good seasons, three very bad ones, and one moderate one. Now there are two moderate seasons and probably five good ones. For myself, I should go much farther than this. It is only a series of accidents, in my opinion, that has prevented the grouse stocks in Scotland from being quite as heavy as they were in 1888.

"Undoubtedly the grouse seasons run in cycles through some mysterious law which we are at present unable to fathom. Towards the end of the period one sees birds on the moors getting to look shabby and bad. In the old dogging days immense quantities of these birds were left all over the place. Now we are able to kill them off by driving and working the burnsides. In the non-driving era in stepped the disease and swept everything off the moor, and we had to wait in patience

till things recovered. Nowadays we shoot a little harder than usual, kill off all the bad birds, and leave a fair stock, which with easy shooting soon comes round again. For some years we have been unfortunate with these periods. Thus in 1894 a very large stock of birds was left, which in the ordinary course would have been the foundation of record seasons in the next two years, but the terrible winter of 1895, which killed so many thousands of grouse, spoilt this period, and things had to begin afresh, though very large stocks had worked up again by 1901. With the terrible storm of the spring of 1902, which practically destroyed most of the older heather on the East Coast, the period was again prevented from giving the results it should have done. We have now got up the stocks again to very large dimensions, and with luck and the absence of disease should break all records in the next seasons.

"I take it that the more food there is for grouse the better. The evidence is that a grouse makes several thousand pecks of heather each day before he gets his full supply of food. I think the bird only feeds for a very limited time each night, and the shorter the distance he has to go for his food the better, and as he feeds mostly just as it is getting dusk he is not very well able to distinguish between good and bad heather, and often gets a craw full of stuff which does not agree with him. If you notice (as it is on most of the Welsh moors) where the sheep have grazed the heather up to a wire fence, on the other side of the fence the heather is perfectly good, and every grouse will be found feeding on it. If through the late spring or from other causes one cannot get a portion of the moor burnt, that part will invariably have less grouse on it than where there is young heather.

"I do not think sheep of a certain class do much harm on a grouse moor if they are properly looked after. The trouble is that shepherds do not take enough pains to keep things quiet. Breeding ewes are very bad when the lambing takes place on the heather, as the shepherd must be continually moving about among them, and disturbing the ground at the very time the grouse are nesting. Provided sheep are lambed on the green fields below the heather, and provided the shepherd is careful and goes about his work quietly, I think sheep do no great harm; and undoubtedly the paths they make through the heather are an advantage to the grouse, which are then enabled to move their broods about more easily. There is much more heather where there are no sheep, and the more heather you have the more grouse there will be. On a driving moor

especially sheep are better off the ground. The long line of drivers move the sheep a great deal, and in hot weather this is bad for the sheep. One can leave big masses of birds on the march secure in the knowledge that there is no shepherd to come along and put them into a neighbouring moor. The wire fences, which are a necessity where sheep are present, are, of course, death-traps for grouse.—Yours sincerely,

"W. H. TOMASSON"

RED GROUSE

GROUSE PRESERVING AND GROUSE BAGS AS AFFECTED BY THE METHODS OF SHOOTING, PRESENCE OF SHEEP, DRAINING OF MOORS, BURNING OF HEATHER, AND THE BREEDING BY HAND—

1. AS REGARDS ENGLAND
2. IN REFERENCE TO SCOTLAND
3. IN REGARD TO WALES

THEORETICALLY the stock of grouse ought to depend upon the amount of food present on the moorlands on which they live. In practice it does nothing of the kind—at least, not if we consider heather to be the food of the grouse. A sheep will eat twenty times as much food as a grouse, and if only half the sheep diet is heather, which is giving them a larger proportion of grass than they can get on most moors, then in theory it ought to be that the clearing of one sheep off an acre upon which there was but one grouse should result in an addition of ten grouse to that acre. But in practice it is doubtful whether it results in one single added grouse, or even one additional to 100 acres. But this is not any proof that the removal of sheep is bad policy. There are so many other things that have to be taken into account. Whether the sheep do harm or good by themselves is not certain, but in any case the shepherding is very bad for grouse chicks that have just strength enough to go a long way down hill and none to get back again to the brooding parent birds. The latter cannot carry their young like a woodcock, nor can they, like a Parliamentary bird of fame, be in two places at once. The author has not

been able to arrive at any very definite conclusion in regard to the negative or positive value of the presence of sheep themselves, the evidence is so very conflicting. On the Ruabon Hills there are 5000 sheep on the 7000 acres of the most productive grouse ground in Wales; moreover, there are 70 commoners who each have a few dogs, and the latter's business is to keep the sheep off the cultivated fields, either in the presence of their masters or not, as convenience and occasion serves. Then, on Mr. Lloyd Price's bigger moor of Rhiwlas, the sheep have been reduced to a minimum, and belong to the keeper. Yet here 1000 brace has been about the best of the bags, but they have been improving. Now, if these two moors grew heather of equal merit, and if they were at equal elevations, we could say at once that sheep are valuable to grouse. But these things are very different on those two moors, and we can say nothing, but merely record the facts. Again, in Yorkshire the fashion has been to decrease the sheep to disappearing point; but when Lord Walsingham made his great personal bag of 1070 grouse in the day on a 2200 acre moor, there were 1400 sheep upon it, and there were nearly 2000 grouse killed there in that season. Even now, in Yorkshire, Askrigg is about as productive, acre for acre, as any moor, and it is common land, and fairly swarms with sheep. On the other hand, this is not true of Broomhead, where a grouse and a half to the acre have been got before now, but it was true of practically all the moors where great bags were made in 1871 and 1872 and before. And as the general grouse stock has never again reached the level of those years, it may be that there is some value in sheep that has not been discovered, and to which we cannot give a name. Some people believe that the sheep help the grouse in winter, by uncovering the heather when it is snow-buried. Probably there is a good deal to be said for that, but more upon high ground than low moors, because of course the object is to keep the grouse at home, and prevent them from migrating down the straths in those large packs that may or may not return again. On the lowest moors in the district it

is probable that there is less advantage in keeping the birds from seeking winter food elsewhere. They must needs go for it below the heather belt, and this ground will not keep them in the spring, as the lower moors undoubtedly keep a large number of those grouse that in hard weather visit them from higher moors. No doubt many half-starved grouse get killed when they visit lower grouse, and arable, ground, but unless the snow disappears very early in the spring the lowest moors are always favoured by some visitors stopping to breed. For them this is a change of blood, which possibly the higher elevation birds never do get. Be this as it may, there is always some moor in a neighbourhood, just as there is a piece of ground on nearly every shooting, that will at all times have more grouse upon it than are bred there, except when birds are too young to travel far. It is difficult to put a limit on these winter movements, or to give any idea how far the birds may not go for "black ground."

This seems to depend a good deal upon the way the snow comes and stops. It may be affirmed that no matter how far it may be off them, if grouse can see black ground when their own is under frozen snow they will go to it. This in turn may be covered up, and then they will again go downwards. The late Mr. Dunbar, who sublet most of Sir Tollemache Sinclair's shootings in Caithness, told the author that he had known the Caithness grouse driven to the seashore in hard weather, when the heather was all covered with snow. It would be a most excellent arrangement of Nature that the grouse go for food wherever it is to be had, if it were left to Nature, but it is not. People on the cultivated farms regard the arrival of the grouse as a great day, in which Providence has sought them out for a blessing, just as the Israelites in the Wilderness thought about the quail, which were possibly merely seeking their own migratory ends, like the starving grouse. Those on the lower moors see increased numbers of grouse, and kill them, knowing that if they do not somebody else will. So that the general result of this migration is that the total stock of the whole county, or country, is kept much lower than any sportsmen

or owners of moors wish, and instead of being 1200 pairs left to breed on 4500 acres, which is Mr. Rimington Wilson's estimate for his crack moor near Sheffield, the spring stock the country over does not average, in the belief of the writer, more than 250 pairs on every 4500 acres, and in this estimate he does not include the grass hills, the floe ground, or the ptarmigan tops, or deer forests.

By the habits of the grouse the owners of moors are compelled, therefore, more or less to pool their breeding stocks. Nothing seems likely to overcome the difficulty except a system of winter feeding in snow-time, and this is much more easily discussed than accomplished. Even if oat stacks with the corn in the straw, and more oats added to it to avoid unnecessary carting of straw, were erected, and protected in the early autumn, in various parts of a moor, these to be of any use would require to be visited in the very worst of the snow, in order that the protection might be removed and the grouse might start to scratch about for food. But there are many parts of many moors where an expedition at such a time would be a work of danger, for many a life has been lost in the snowstorms of the Highlands.

This digression into winter feeding of grouse arose out of the question of sheep or no sheep. Difficult as this is in Yorkshire, Wales, and the Lowlands of Scotland, it is very much more complicated in the Highlands, where sheep have to be considered not alone as an addition to grouse moors, but also as a protection to the deer forests. It is necessary to the forest owners that they should not lose their rentals by the movements of deer to grouse ground in the stalking season.

Where one forest adjoins another, exchange is no robbery; but where they adjoin sheep ground the only two possible ways of preventing a loss of deer are wire deer fences and the presence of sheep and shepherds. The former is out of favour, and will probably never come in again. It converts

forests into parks, and park deer have no sporting value. Consequently, only the sheep and the shepherds are left. To remove them anywhere in the neighbourhood of forests is automatically to stock the ground with deer. This may be a wise or an unwise policy as circumstances arise, but it is very bad for the established forests to lose their best beasts, which take years to grow. Then to have deer forests interspersed through the more cultivated districts of the Highlands would probably lead to a revolution, or at least to the unauthorised destruction of the deer when they attacked the farmers' crops.

The burning of the heather is rarely done half well enough. It is very expensive in districts far removed from considerable population. There is so much delay caused by waiting for the weather. The ideal conditions are wet ground and dry air and heather, in order that the tops of the plant shall be thoroughly burned and the roots and the heather seed in the ground not much heated. But to wait for such ideal conditions would be rarely to burn at all, and consequently risks are taken, but even as it is, not nearly enough heather is burned. On some moors the author has visited he could say there were 1000 acres of heather and that one match would destroy it all. Where such enormous beds of old heather do exist, it might be bolder than wise to apply that match and leave the rest to chance. But it always runs this risk even when grouse are sitting on their eggs. There are not many nests in such ground, nevertheless it is a pity to destroy it all, for this old heather is the most valuable when snow is on the moor, but the mere fact of burning strips through it greatly increases this value as well as every other. It assists the snow to drift, which in covering some parts deeply leaves the other bare. Shelter and food is what the grouse most want in the storm, and the very long heather supplies both to a very great extent. But a very little of it will go a long way for this purpose. The grouse never eat it at other times, so that it is *all* left for winter feeding. These long old heather patches may also have a value in collecting grouse on driving days,

but they have none for dog work; for grouse will not resort to them unless forced to, and dogs cannot work to advantage in them.

Some people prefer burning in small patches to burning in strips, and theoretically the former can be defended as enabling more birds to feed when out of sight of their brethren and enemies. Nevertheless, the grouse stocks in both England and Scotland reached their apex when most of, if not all, the burning was done in strips.

A too heavy stock of breeding ewes, in contrast to as heavy a stock of feeding or fat sheep, is said to destroy heather, and cause grass to supplant it. Although the author has several times had cause to believe this to be quite true, he has never actually seen these results.

Another cause of heather destruction has come under his personal observation, and is very serious indeed when it occurs. It comes in the form of a small beetle which some ten years ago (then, it is believed, unnamed by science) attacked thousands of acres of the heather (*calluna*), but would not touch the bell heather (*erica*). It destroyed and bit through the roots of the plants, half starved the sheep in consequence, and caused the grouse to entirely leave some of the moors in the neighbourhood of Castle Douglas. The only stay to it was fire, and square miles of heather were consequently burnt. On going over the ground ten years afterwards, it was observed by the author that only a very occasional root of heather had re-started, so that most of the roots must have been killed, and there was evidently no seed in the ground. But all the bell heather plants re-started to grow after the cremation of heather and beetles together. Judging by the destruction wrought, here is a pest that, under favourable circumstances to itself, might destroy all the heather in the country, and incidentally grouse shooting as well. The name of this beetle is *Lochmæa suturalis*.

Draining is receiving a great deal of attention, and well is the subject worth it. The worst kind of land on any moor is what is called "floe" ground. For the grouse it is useless, and nothing and nobody seems able to make any use of it. It is

not good for fish in the winter when it forms a lake, nor for grouse in the summer when its islets of stunted heather become dry hillocks surrounded by death-traps for little grouse, not only because of their inability to get from one tussock to another without swimming, but probably also because of the millions of insects they breed. The midge flies swarm when these places are wet, and possibly carry grouse disease in their bites from diseased grouse to the healthy, which thereby become diseased. Probably few grouse chicks are drowned in such places, because the old birds instinctively avoid them for nesting. But neither they nor their chicks can avoid the midges, and, as the author pointed out some years ago, in an article in the *Fortnightly Review*, if Dr. Klein's investigation of the disease did really result in the discovery of the true cause of it, namely the bacilli he cultivated from diseased grouse, then everything else he did pointed to the conclusion that only by direct injection under the skin could grouse disease be given from one creature to another, except in close confinement, as when birds healthy and diseased were confined together under one cloth and in a room. Since the writing of that article the Grouse Committee has been appointed, and Mr. Rimington Wilson, who is upon it, has been good enough to inform the author that one of the points being investigated is the midge theory.

A great many people think that the Committee will do no good, but surely in the present state of science it is only a question of money. Probably critics mean that if the bacilli of the disease is discovered, or re-discovered, we shall be no more forward, as the way to exterminate them or their possible hosts will still have to be inquired into. But if it should be discovered that the midges can convey the disease, and that is an extremely easy thing to test, then we need not bother about the life history of the interesting bacilli, but start and drain the breeding-places of their intermediate hosts—the midge flies. This would have one advantage outside all consideration of disease, for it would add possibly one-third to the productive area of the average Highland moor. Probably Mr. Rimington

Wilson's Broomhead moor is the most free of any from disease, and it is generally considered also about the driest moor in Yorkshire. All moors are quite well enough stocked with midges, but occasionally in hot wet weather they come in clouds. It was so in the autumn of 1873, and it was so again in the autumn before the last outbreak of grouse disease in the Highlands. It has been said that grouse disease is always present, and breaks out when the grouse are weakly and food is scarce. These may be contributory circumstances, but that is doubtful. In the hard winter of 1895—or was it 1896?—thousands of grouse died from starvation, but none from disease.

The different methods of killing grouse one year are supposed to have a great deal of influence on the breeding success of their collateral relations the next. Apparently this is as if one said that an honest tradesman was successful and had a large family *because* his brother the highwayman was hanged instead of being beheaded. But this is only the superficial side of the question, which is one of the survival of the fittest. It is said with a good deal of truth that to drive the grouse is an automatic selection of the old birds for the poulterer, and of the young ones for breeding. This is no doubt quite true, but at the same time grouse driving has only been followed by enormous increases of stock in England, and not in the Highlands of Scotland. The apex of grouse stock in both countries was reached in 1872, and the question arises why it was brought about by driving in the South Country, and, on the contrary, practically before driving had made any headway in Scotland. The difference of effect of what was the same system in both can probably be accounted for partly in several different ways. Both "becking" and "kiting" are also automatic selections not only of the old birds, but particularly of the old cocks. This is easy enough to understand in regard to "becking," but is only to be discovered by experience in "kiting." It appears that the hens are not often shot under a kite, and the reason is supposed to be that they are the more timid, and make off before the kite gets near. Both these systems were practised in the Highlands before driving was

introduced, but so they were also in Yorkshire. In the Highlands the grouse were not so wild but that the shooter could select the old cock of a brood and kill him over the dogs. In Yorkshire this could not be done; it was difficult to get near the youngest broods, to say nothing of the old cocks, and it had been difficult for half a century, as is pointed out in the chapter headed "Grouse that lie and Grouse that fly." Then, when these old cocks became widowers and joined others similarly afflicted, nothing could sufficiently reduce their numbers, and it was not reduction but extermination that was wanted. Driving in Yorkshire accomplished this, for there are no rocky "tops" there which defy the drivers. In Scotland, on the other hand, the wilder the old cocks grow the more certainly they get upon these "tops," and the safer they become from the gun.

When driving is put off until the 1st of September or thereabouts, as it mostly is in Scotland, the driving is not an automatic selection of a large proportion of the old birds; on the contrary, they soon get up on the "tops" when disturbance often occurs below, and they leave the hens and the broods to "face the music" in the strath. Thus, on the rolling moors of Yorkshire the wilder the old cocks become the more certainly they get driven to the guns, whereas in Scotland the more certainly they find security on the tops that never yet have been *successfully* driven. Before peregrines were mostly destroyed, the old cocks dare not venture on those covertless tops. From these facts it can be gathered that it is not the driving that makes all the difference, but merely the killing of barren and old birds, and that it does not matter how this is accomplished so that it is done thoroughly. The assumption is that it was done thoroughly in Scotland before driving began, and that it was impossible to do it in England, where the birds were a fortnight earlier and out of all comparison wilder. At any rate, we cannot deny that before grouse butts were seen on one moor in fifty in Scotland, the grouse stock had arrived at its highest point; that between 10,000 and 11,000 grouse had fallen before dogs at Glenbuchat in the season of 1872; that over 7000 had been killed in a month at Delnadamph, in Aberdeen-

shire; and also that 220 brace had been killed to one gun over dogs at Grandtully, in Perthshire, in a single day, as had a similar bag a couple of decades before by Colonel Campbell of Monzie. Only once since has as large a bag been made by one gun in the day, and that was twenty years ago. Now Scotch moors do not equal the season's bags recorded above, nor do men make as big single gun-bags over dogs. Only once in 1905, and again in 1906, have a pair of guns shooting together equalled 100 brace in the day.

Another question arises here naturally. It is: Are the birds wilder than they were thirty-five years ago, and does driving at the end of the season make them wilder for the next season? No doubt it makes the old cocks wilder, but the grouse hen is only just as wild as her brood always. Even in Yorkshire, before the brood can fly the grouse hen lies to be trodden up; she grows wild exactly in proportion to the wildness of her chicks, and if we are to believe the biologists, acquired character is not transmitted to offspring. The author believes that the principal necessity in all grouse preservation is to kill a large proportion of the old cocks whether they have had broods or not, and consequently where wildnesss makes them secure they should not be made wild by end of the season driving, either with or without a preliminary of dog work. Had the author the planning and management of Highland moors now as he had years ago, he would get rid of these already-made-wild old cocks by driving each beat the day before dogging it, but with drivers just so far apart as appeared to be necessary to make sure of moving the old cocks but not the broods, which in any case will not drive well as early as the first week of shooting. The clearance of the objectionable brigade, which if left alone the first bad weather will send to the "tops," is as necessary for a driving moor as for a dog moor, and as it is for one which has previously been both. The greater market value of the dog moors in the Highlands over the driving moors in England (grouse for grouse) makes it necessary to find a way to negative the damage done by making the old cocks wild. But the writer is not sure that the manner of going up to dogs is not

responsible for half the apparent wildness of the old cocks. It is well known that nothing makes any birds fly so quickly as the thought that they are seen. Walking straight to a dog's point, the handler in the middle and a gun on each side of him, convinces any self-respecting old cock that he is seen, and off he goes. On the other hand, if the handler advances in the tracks of one of the shooters, and these walk up 40 yards wide of the dog on either side, they may then safely pass the point a considerable distance, and if it is necessary, they can, with the handler, go back to the dog. If birds have allowed them to pass thus, they will also allow them to close in on them, for they will feel themselves surrounded. The old cock meantime has assuredly run forward, and nine times out of ten also turned to right or left, and the chances are great that one of the shooters will by these tactics just head him off, and get a possible shot at a bird that would otherwise have stood no chance of being killed.

The walking wide, in first driving, is practised on the Ruabon moors by Mr. Wynne Corrie in order to secure a greater proportion of old cocks and let off more young birds than would otherwise be the case. Mr. Corrie has given the author some very valuable information upon his management of the Ruabon Hills, but clearly if such tactics are necessary on a moor where the old birds cannot by wildness take to the "tops" and save themselves, they are ten times more necessary where this can be and is always done. In Caithnessshire the old cocks can be killed at any time of the season; they run there; and a dog that rodes well and fast is a necessity. Mr. W. Arkwright, of pointer celebrity, makes a practice of hunting down these old birds until he makes his grouse moor similar to that paradise regained as a sign of which seven women were to cling to one man. In practice it is only two hens that cling to one cock, and this upset of the natural order has also been observed on the Ruabon Hills, particularly in 1905; and the keeper there tells the writer that when it occurs he *always* notices that it is followed by a good season. Here are two opposite methods accomplishing the same end, and the author knows enough of the subject, besides, to be able to

say, Make your grouse polygamous by force of circumstances, and each hen will be contented with half the ground she otherwise would have considered hers by right of masculine strife.

In considering and comparing present-day bags with those of earlier years, it is necessary to avoid comparing now well managed moors with themselves at a time when they were badly managed. There are all degrees of bad management, and what we have to do is to go to the moors that yielded the best at the various dates and consider what was the management that brought this about. Some of the best moors in Scotland seem to have been very poorly managed in the great year of 1872. There is Menzies Castle moor, for instance, which lies only half a dozen miles or so from the record-breaking Grandtully moor, and yet in 1872, when the latter surprised all grouse shooters, the former was said to be very badly off for grouse, and the birds killed over dogs were nearly all old ones. Nevertheless, be it noted that the bags of old birds made were then far above the average of present-day shootings, which not only shows what was expected by sportsmen in those times, but also how the old birds sat to dogs. There were some peregrines to keep them in the long heather.

All the old records of English moors point to the capacity of the ground for carrying grouse, but to their scarcity nevertheless. The Scotch moors, on the contrary, seem to have had as many birds in the first years of the nineteenth century as they had at any time. Colonel Thornton, in his description of his Highland tour, spoke of big packs of 3000 birds as common in the winter, and in October he found the grouse lie too well in the Duke of Gordon's country, whereas shortly afterwards on a 12th of August the celebrated Colonel Hawker could do nothing with the wild Yorkshire grouse, where the birds were also particularly scarce. There is no doubt that this scarcity was brought about by Act of Parliament, which fixed the opening season that suited Scotland, and by a fortnight's earlier breeding just made it impossible to kill the old cocks in Yorkshire. They, in turn, would not breed themselves or let others do so, so that the practice in Yorkshire became almost

precisely what it is now in those deer forests where they desire to exterminate the grouse, and do it by leaving them *entirely alone*.

In 1849 there was driving in Yorkshire; for in that year, on Sir Spencer Stanhope's moor, Durnford Bridge, there were 448 grouse killed in one day.

The following bags will show what happened in Yorkshire at a glance, but nothing of this sort of rapid increase, as a consequence of driving the birds, will be found as applying to Scotland :—

GROUSE KILLED ON BLUBBERHOUSES MOOR—2200 ACRES

Year.	Total bags in braces.	Year.	Total bags in braces.	Year.	Total bags in braces.
1829	60	1834	69½	1839	26½
1830	77	1835	90	1840	26
1831	14½	1836	12	1841	35½
1832	31	1837	25	1842	21
1833	82	1838	42½	1843	91

GROUSE KILLED ON BLUBBERHOUSES AND DALLOWGILL MOORS IN SEASONS FOLLOWING THE ABOVE

(*About* 1862 *a little driving began*)

Year.	Year's bag at Dallowgill. Braces.	Year's bag at Blubberhouses. Braces.
1865	...	239
1866	...	691
1870	...	478
1871	2149	...
1872	2417	807½
1873	208½	disease.
1874	177½	disease.
1875	508	no record.
1876	1576	725
1877	1345½	781
1878	1892	704
1879	781	241
1880	1015½	no record.
1881	945	388½
1882	1551	770
1883	2948½	346½
1884	2519	622
1885	1620½	277
1886	1312½	646
1887	2125½	no record.
1888	2501½	919

The last figure was given to the author by Lord Walsingham about the time the bag of 1070 grouse made in the day by his gun was discussed, and might possibly have been added to later in the season.

Two points are likely to arise in an examination of the bags. First, was it that the birds were not upon the Yorkshire moors, or only that they could not be killed, that made the season's bags so poor prior to driving?

The other point is: Do big day's bags point to great stocks of game on the moors; and arising out of that, do great bags help to improve the stock?

The answers, from the bags to be mentioned, will be found to be that in the early days the birds were not on the Yorkshire hills, and if they had been there they could have been killed in numbers, except the wild old cocks. The proof is to be found in the facts that, as lately as 1872, there were 1099 brace of grouse killed in a day on Bowes moor *over dogs*, and that the day after Lord Walsingham made his great one-gun bag at Blubberhouses by driving, he walked up and shot in half a day 26 brace, or more than the whole moor had yielded in many a previous anti-driving season. It will be found, also, that big day's bags do not necessarily point to big stocks of grouse, since, at least twice, one gun has in one day taken more than half the season's total bag off a moor. But that very big driving days on a small moor are better than a constant worry by smaller drivings of the grouse is almost too obvious to name.

Lord Walsingham killed to his own gun in one day of 1872 421 brace of grouse when the season's bag was 807½ brace; and in 1888, after a very bad breeding season, he killed 535 brace to his own gun in the day, and there were 919 brace bagged in that season. Similar proof of the skill of drivers and shooters when the stocks of game were but moderate are to be had elsewhere. The late Sir Fred Milbank's best year at Wemmergill was in 1872, when he got 17,074 grouse, and his best bag was 2070 grouse. Lord Westbury, his successor on that moor, had a best day of about the same number, but

his best year gave but 9797 grouse. Mr. R. Rimington Wilson killed 2743 birds in the day in 1904, but the season was not perhaps as good as that of 1905, when only 1744 grouse were shot on the best day, when Mr. Rimington Wilson was good enough to inform the author that the season was above the average, and that the direction of the wind makes all the difference. In 1906, the day, chosen months ahead, happened to be one of those heat record-breaking ones that caused the grouse to refuse to fly more than once, and only about 1320 grouse were killed on the first day, which, however comparatively bad there, would be absolutely splendid as times go elsewhere.

Again, in 1905, Mr. Wynne Corrie had his record season, but his big days were larger in the previous season. In 1904 they were 760½ and 781 brace respectively, and in 1905 there were 638½ brace shot on the best day. This is not as remarkable as the fact that in 1901 there were killed there 3341 brace, before big bags were started; and there were but 2103 brace killed in the year of the record bag.

The apex of grouse stock having been reached in Yorkshire in 1872, within a decade of the general beginning of driving, it was felt that the way to enormous stocks was discovered, and that these stocks were worth every attention and large capital outlay in the improvement of moorlands, but as a matter of fact it is difficult to find that all the improvement since has done any good to the head of game. If it has, it can only be discovered over periods of years, and not by comparing any one year with the results obtained in 1871 and 1872. The period of years is the better test if it can be fairly applied, but results come out differently altogether in accordance with the arbitrary selection of dates to begin and end these periods.

It has already been mentioned how wonderfully grouse have done in the absence of one of these improvements, namely the removal of sheep on the Ruabon Hills, and sheep are just as plentiful at Askrigg, in Yorkshire, where nevertheless Mr. Vyner has killed on a moor of 2000 acres, in 1894, 2775 grouse; in 1897, 2959 grouse; in 1898 there was a total of 2095 grouse;

in 1901 there were shot 2686 grouse; and in 1902 there were 2898 grouse bagged.

Mr. Wynne Corrie has improved the best season's bag at Ruabon Hills by about 1000 brace, or one-third more than the previous best. He has given the author four reasons to which he attributes the improvement, and as his is nearly the only South Country grouse moor that at once shows a great stock and also a great improvement over season's bags of four decades ago, they are here stated:—

1. Leaving as large a head of breeding birds as possible.
2. Improvement of the heather.
3. Sunk butts.
4. Not shooting any grouse over dogs.

Probably it will be gathered from the records of bags made that the system of *only* driving, in Yorkshire, has not increased the birds since 1872, and that dog work and driving afterwards has also had the same stagnant or retarding effect in Scotland, where also driving alone has made no improvement either, that when it could be said of moors that they produced as well as their neighbours, of similar area and conditions, under previous management. This is all very disappointing to those who give time and money to moor improvement, and sacrifice their shooting several years in order to get up the head of game. It is not pleasant to have to mention these partial failures, but it is felt that if we do not look facts in the face as they are, there is little chance of improvement. There is, in fact, a something *besides disease* that keeps the grouse stock below a certain point in the best of years, and, as Allan Brown says, causes a little grouse to require as much land to itself as a cow.

These bags are not quoted, then, merely because they are records, but because they teach that there is something never yet found out that is infinitely more important to discover than the bacilli of the grouse disease. It must be more potent than disease in its effects of keeping the grouse stock down. For their numbers from a stock-breeder's point of view seem utterly absurd. That vegetable-feeding birds weighing under 2 lbs. should want as much vegetation to themselves as sheep

weighing 50 lbs. is the point, and there must be a reason for it, although it has never yet been discovered or even searched for, as far as is known to the author. But before dealing with that point it is necessary to show the present stagnation under every system.

At that period when Yorkshire grouse were only remarkable for their scarcity, Colonel Campbell of Monzie killed 184½ brace in 1843 in a day, 191 brace in 1846, and another bag of 222½ brace with no date mentioned. On the Menzies Castle moor, before mentioned, it was said the 1872 birds were mostly old and bred badly, yet five shooters obtained the following bags in the three first days, namely, 205, 117, and 168 brace; in 1905, an excellent breeding season, the bags were on the same moor 115 and 76 brace. Then at Grandtully, close by, the 1872 season yielded 220 brace to the single gun of the Maharajah Duleep Singh in a day, and in the first day of 1906 four guns got 35 brace. There were 7000 grouse killed at Delnadamph, mostly by driving, in 1872, when, elsewhere, there were no butts, as at Glenbuchat, where they killed nevertheless 10,600 grouse over dogs. Nothing like the above is done over dogs now, the nearest approach to it being at Sir John Gladstone's moors, where upon occasion within the decade about 4000 grouse have been killed over dogs, and 6000 later by driving.

Unquestionably the best average in England has been kept up at Broomhead, the season's bags of which have never been published, but the two best days in each season have been, and as records alone they are of great interest, even if nothing but facts could be deduced from them (see table on opposite page).

Bags made on Bowes subscription moor on 12th August 1872 were for 30 shooters over dogs as follows:—85½, 65½, 56½, 54, 49, 45, 44½, 43, 50, 40½, 41½, 41½, 36, 35, 35½, 35½, 35, 33, 33, 32, 32, 29½, 23½, 21½, 23, 21, 16, 27½, 8, 5½ brace. Total, 1099 brace.

This remarkable bag on a 12,000 acre moor establishes many things, one of which is that the grouse in Yorkshire could have been killed in quantities at any time had there been enough guns, so that the broods after being flushed by one shooter were quickly found by another, and given no time to collect after

being scattered. But the wildness of the grouse on this moor is shown by the top scorer getting only about half the bag that some shooters obtained on the Scotch moors of the time. For instance, at Glenquoich Lodge, near Dunkeld, there were killed 124½, 114, and 88½ brace by three guns on the Twelfth; thus the three guns got 327 brace in the day, and this kind of bag was by no means unusual. In Yorkshire there were numerous bags of 1000 brace, and over, made that season. They occurred at Wemmergill, Dallowgill, Broomhead, Bowes, and High Force (probably); at any rate, at the latter place, there were in 19 days driving 15,484 grouse killed, and at Wemmergill adjoining there were 17,074 grouse shot for the season.

Writing in 1888, Lord Walsingham said he thought that the great increase of grouse was to be attributed to the burning of the heather in Yorkshire during the previous twenty-five years. But

BAGS MADE AT BROOMHEAD

Date.	Guns.	Brace in the day.	Brace in the best two days.
Sept. 6, 1872	13	1313	...
,, 3, 1890	8	819	...
,, 9, 1891	8	630	...
Aug. 30, 1893	9	1324	2125½
Sept. 1, ,,	9	801½	
Aug. 29, 1894	9	1007	1694
,, 31, ,,	9	687	
Sept. 4, 1895	8	624	...
Aug. 26, 1896	9	1090	...
,, 25, 1897	9	1006	...
,, 24, 1898	9	1103½	...
,, 30, 1899	9	1013	...
,, 29, 1900	9	586	...
Sept. 4, 1901	9	712	1447
,, 25, ,,	9	735	
Aug. 27, 1902	9	693	950
,, 29, ,,	9	257	
,, 26, 1903	9	703½	1188
,, 28, ,,	9	484½	
,, 24, 1904	9	1371½	1777
,, 26, ,,	9	405½	
,, 30, 1905	9	872	1476
Sept. 1, ,,	9	604	
1906	...	660(roughly)	...

no moors the author saw in Yorkshire about that time could bear comparison for regular burning with the moor of Dunbeath, in Caithness, where the strips were as regular and as well defined as the different crops in a market garden; and again, about 1875, the author went over Bowes moor to inspect for a possible purchaser, and he never saw any heather so badly neglected for want of burning. Although there were very few grouse there at that time, this was obviously due to the disease, for there had been any number of them three seasons before.

Driving the grouse at Moy Hall moors was started in a partial manner, without butts, in 1869, and the driving done between then and 1872 was limited to the birds round the corn-fields, and could have had no effect on the stock.

In 1871 the bag was	. . . .	2836 grouse.
„ 1872 „ „	. . . .	3002 „

Between 1876 and 1879 no driving was done there, but in 1879 there were 103 grouse killed in six drives on the 1st of September.

In that year the kill was 5172 grouse, when the bag was assisted by driving, but the preservation had not been so assisted.

In 1888 there were killed 5822 grouse by means of dogs first and driving afterwards, and in the next season, which was a bad one, dogs were used for the last time.

In 1891 there were shot	. . .	3612 grouse.
In 1892 the bag was	. . .	3513 „
In 1893 there were killed	. . .	4480 „
In 1894 the season produced	. .	4563 „
In 1895 the total fell to	. . .	2511 „
In 1896 it fell lower, to	. . .	1402 „
In 1897 it touched lower, to	. .	1131 „
In 1898 it began to rise to	. . .	1943 „
In 1899 there were shot	. . .	3416 „
In 1900 the bag was	. . . .	6092 „
In 1901 the apex was	. . .	7127 „

Since that year the season's bags have not been published, and it is believed that they fell off very much until 1905, when there was a good recovery, but not a record, and disappointment occurred again in 1906.

From these figures we are not able to gather that driving and no dog work has acted as a means of preservation and an increase of the stock, but that it has enabled the grouse to be killed when they were there, as they undoubtedly were in 1879, when the driving was so little understood that it did not materially assist the bags for the season, as may be gathered from the bag for the day quoted above. Nothing can be gathered from these bags to suggest that anything like a remedy for the stagnation spoken of has been discovered, and we hope in vain, year by year, to see that advance of from 400 to 800 per cent. spoken of by Lord Walsingham, eighteen years ago, in regard to Yorkshire.

It has been already pointed out that by draining a moor one may often add a third to its heather-bearing land, and also that by removing a sheep to the acre one conserves about ten times the heather food a grouse eats. Yet neither of these methods has made very much difference anywhere. Both have done something to add to the stock in places, and both have also been disappointing in other places. Surely there must be some reason that has not only never been discovered, but has not even been looked for. It has been shown that were it only a question of heather food, the removal of sheep, where they are one to an acre, would multiply the grouse capacity of the moors by ten times, and the author believes that the majority of moors have on them, even when they carry sheep, ten times the heather the grouse require. If the former, to say nothing of the latter, is approximately true, then there must be something besides heather the grouse require, and the absence of which, in quantities, prevents their increase beyond two to an acre even on the *most favourable* moors.

There is no doubt from the above facts that there is some such want, but what it is the author can only speculate upon. It appears likely that what is wanted by all young grouse, as by

all young animals of other kinds, is proteid. Young birds of all kinds take it in the form of insects, or artificial substitutes. That little grouse begin at once to eat heather is true, but it has never been proved that they can be reared on heather and nothing else. On the other hand, it *has* been proved that they can be reared without heather, provided they get plenty of insect food. They appear to be almost the easiest of game birds to rear, provided they have leave to help themselves to the insects of the fields, or are supplied with crissel and ants' eggs by hand. For these reasons the author has arrived at the opinion that, provided the young grouse could be supplied with proteid (insects) for the first three weeks of life, the heather is sufficient to support ten times the numbers found upon the moors in most cases. Of course this could only be done by hand rearing of the birds. But as the grouse seem to lay more readily in confinement than partridges, and as these latter most particular birds have, by the French system, been doubled and doubled again, there seems to be no reason why grouse should not be increased in the same way.

It may be said that disease would stop anything of the kind, but those who advocate the increase of grouse to shoot by the decrease of the parent stock have, it is to be hoped, had their innings. It can be proved that where breeding grouse are kept up to the highest point, there also they are the most healthy.

The author has doubts whether it is desirable to increase the hand rearing of game; but in a book on shooting and game preservation the ethics of sport are not practical if they limit production in any way.

The red grouse (*Lagopus scoticus*) may be shot from the morning of the 12th of August to the evening of the 10th of December. Heather burning is legal at all times in England, but only from 1st of November to 10th of April in Scotland, which is another means by which an Act of Parliament has damaged the interests of the grouse shooter, since it generally happens that not enough heather burning can be done in the winter months, and September and October are quite as necessary burning months as March itself.

METHODS OF SHOOTING THE RED GROUSE

WHETHER we ask the driver of game or the dog man does not matter, all are agreed that the red grouse is the most sporting bird we have. It is only necessary to see how artfully grouse butts are placed, in order to make the shooting as easy as possible, to know that the grouse's flight is a match for the shooter. Successful drivings, or big bags in the day, which is the same thing, require every assistance to be given to the gunner, for in grouse shooting height is an assistance to him, although it is the reverse in pheasant shooting. The reason is that the grouse usually flies too low for a clear sight of it against the sky, and also low enough to make shooting dangerous when the birds cross the line of the butts. The time has not yet come with grouse, as it has with pheasants to a great extent, when beats are planned to make the shooting as difficult as possible. This is not wholly true of pheasants either, because no one for the sake of increased difficulty places shooters amongst trees, and especially fir trees, and nobody for the added difficulty shoots his pheasants when the leaf is still on. In the same way, a grouse driver does not put his butts where grouse cannot be seen approaching, but selects a position 40 or more yards behind a slight rise in the ground, in order that the guns may see the game before it is within range, but not so much before that the sight of the gunners in the butts will turn the grouse. So, then, to make big bags, every advantage has to be taken to drive the grouse as easily for the guns as can be done, and besides this the "crack" gunners excel in being best able to select the easiest, or perhaps it would

be better to say the possible birds. They neither lose time in trying to get on to birds when there is not time to succeed, or in shooting at others so far off as to be at wounding distances.

The red grouse also puts the shooter over dogs to the test. Even at the beginning of the season the direct walk up with the dog will generally result in the old cock getting off unshot at. But with two gunners who walk wide of the dog, the chances are that one of them will get a fair shot at the old cock, which invariably runs away, and leaves his wife and children to learn wisdom by experience and his example. Later on it may be necessary to hunt the dogs down wind, and this proceeding nearly always results in making birds lie much better than they otherwise would; for the grouse are found by the dog when the latter is to leeward, and the guns by walking down wind to the point complete the surrounding movement. It may be said that unless grouse have their heads up (when they are only fit for driving) they always are approachable by guns, provided the latter set about it the right way, and have dogs good enough to hunt down wind well and without flushing the game. The qualities required in the dog cover a very wide range—a very long and certain nose, and an absence of drawing up to game to make sure of it; that is, an absence of hesitation in pointing. Then the degree of accuracy of shooting that is enough in driving with cylinder guns at 25 to 30 yards range is not more than half enough with a full choke bore at 50 yards range.

There is ample scope for improvement always in grouse shooting, and the author has never heard of the gunner who is always satisfied with his efforts, either when shooting driven game or when shooting grouse over dogs. Those who talk of the "battue" and "slaughter" in the same breath have never tried, and those drivers of game who talk of shooting over dogs as too easy for their skill find out their own weak spots when they try it.

The proper driving of grouse to the guns is the result of local education based on sound broad principles. The former it is obviously not possible to deal with, and the latter have

already been admirably stated elsewhere, except for this: it has been assumed that grouse can be driven everywhere, but this is very far from correct. They certainly cannot be driven where they will lie well to dogs all the season. Moreover, they cannot be satisfactorily driven when they resort to the "tops" of the ranges of hills or mountains in the Highlands, where a short flight puts them 500 feet over the "flankers'" heads. These flag-men then have no more effect on the direction of the flight of the grouse than the other "insects" in the heather have, for the drivers resemble insects when crawling along so far below.

To state the principle of grouse driving shortly is possibly difficult. It is based upon a series of incidents in the perceptions of the birds, which are influenced by sight alone, and not by hearing or smelling. They should first see a driver far off in the direction it is most wished they should avoid flying to. If they take wing at this first sight, then the act of rising should bring them into sight of a line of men covering every point that they are not desired to make for. Local conditions may alter all this, as it may be that grouse have a constant flight, and take it however they are flushed, but generally they have not. The means stated generally resolves itself into a quarter-circle of beaters on the most down-wind side of a cross-wind beat, attached to a straight line of beaters in the centre and upon the most up-wind side of the beat, so that the men farthest down wind are the most advanced. On the other hand, when the drive is direct to the guns with a full wind, the line of beaters will have two horns each well advanced on either side, unless local conditions make one side dangerous and the other not so Generally they do. The desired flight may or may not be at first in the direction of the line of shooters. The first object may be concentration, either in the air or on the ground. In the first case, the grouse having been got to go towards a concentration point in their flight, are gradually turned to the guns by men who are set at danger points, and either show themselves to or are seen by the grouse at that exact proximity that the sight of the unexpected will have most effect in turning them.

It is a curious fact that when flag-men are seen at a long distance ahead of them, the grouse may or may not swerve in their flight, but seen suddenly when so near as to leave just more than enough time for turning before the impetus has carried them over the head of the man with the flag, they turn off instead of merely swerving. Consequently, the men who are set to turn grouse are a law to themselves. They show themselves at the psychological moment, according to the speed of the grouse. Only a very little is required to turn a slow up-wind pack of grouse, whereas very much will sometimes not turn fast down-wind birds. This turning the birds from the point towards which they are driven is often necessary. Thus grouse may not be willing to drive in another direction, or to drive otherwise might be to lose the birds for the day, and to have the butts where the turn in the flight occurs might be to allow the majority to go straight on into some other moor, not to be seen again that day, if ever.

When birds are, or can be, collected or concentrated upon the ground, it is much more simple. It is difficult then to make everything go right, but it does not require quite the Napoleon of tactics that the other method does. Obviously the concentration of grouse upon the ground implies a larger beat than in the other case—one in which the natural flight of the grouse will induce them to settle before they get within sight of the butts. This concentration and settlement of the birds enables a new formation of drivers to be made, for the collection of the birds may have caused driving right away from the butts in the first instance, and in most cases not directly towards them. The object of all driving is not only to put as many grouse as possible within range of the guns, but the more important part is that of keeping on the moor all those grouse that go by the butts, to be used again and again the same day.

Another way of driving grouse is based upon the same principle, except that the driving is simple, because the beats are short and direct to the guns. In this case natural common sense is much more effective than in the other two, which must depend upon local knowledge almost entirely. But in all

cases men to turn the grouse if they try to break out have to be employed, and they are of no use unless they perfectly understand what the grouse will do under every circumstance that may arise. Some of these men are so clever that when shooters in the butts are watching the operations and believe the big pack has broken out, they suddenly see it turn and head straight to them. Then the gunners recognise that the "pointsman," if the simile is admissible, knows his business better than they know it; for it is clear from their anxiety that they in a similar situation would have shown themselves too soon, and that the flag-man has timed the occasion as accurately as a railway pointsman switches a train on to another line of metals. The short driving system may be exemplified by Lord Walsingham's great performance, when he got 1070 grouse to his own gun in the day in 20 short drives on a 2200 acre moor. The long drive system may be exemplified by the first drive in the day at Mr. Rimington Wilson's Broomhead moor, where 6 drives in the day is the outside limit.

There is a great deal of difference of opinion upon the best form of grouse butt, and some difference upon the best distances apart for them. But these are not abstract questions, although in conversation and books they are treated as if they were. Much depends upon the manner of driving. When the birds are brought from a distance and concentrated, it is clear that they cannot have got used to the sight of the butts on the ground to which they are forced. On the other hand, in short drives the birds are practically never off their own ground, and consequently get used to the butts, however conspicuous they are, and do not fear them. In this case nothing seems to be better than the horseshoe-shaped butt built up of turfs with heather growing on the top. Slight modifications of the horseshoe formation are best made when the butts are used alternately to shoot grouse driven from opposite directions. It is then well that the entrance should be an over-lap of one end.

But where grouse are brought off their own ground, and are not used to the sight of peat cutters and their temporary

stacking of the peat, it seems that sunk butts are of the most value. The latter are much the more costly to make, because they require draining at a depth of 3 or 4 feet below the surface. The manner of making these sunk butts is not to excavate to the full height of a shooter's gun arm, but to use the turf taken out of a partial excavation for making a gradual slope up bank close to the pit, a foot or two above the surrounding surface—the object being that the bank thus made should look like a natural heather bank, and not present a black surface of peats to the sight of approaching grouse. The biggest bags ever made have been obtained with the upright peat butts; but The Mackintosh, who has had the largest day's bag in Scotland, prefers sunk butts.

The latter gentleman also puts his butts nearer together than anyone else. The nearest are about 15 yards apart. This would not suit most people. Possibly, though, this too greatly depends upon the nature of the driving. Twenty yards apart may be far enough for very high pheasants, and may prevent two guns shooting at one bird. If grouse happened to be equally high, as some ground might easily make them, the danger of shooting other's birds would be lessened, and butts could with advantage be nearer together than where the grouse flew low. In the beginning of driving, butts were built 80 yards apart, now they are usually made at 50 yards intervals. Low flying grouse, going half-way between butts 80 yards apart, cannot be dealt with; their nearest point to a gun is 40 yards, but at the moment when they are between the butts they cannot be safely shot at, and before they get there they are out of range.

No doubt most missing of driven grouse is caused by shooting at them too far away. This is the greatest fault of the novice. The next most productive source of missing is shooting under coming birds and over those that have passed the butts. After this, failure to allow enough ahead of fast birds, to compensate for their movement while the shot is going up, is the next most productive of missing, and shooting too much in front of slow up-wind birds runs it hard.

Beating for grouse with dogs is usually done by going to the leeward end of the day's beat and then walking at right angles with the wind, and turning into it at every march to the shooting, or boundary to the beat. This, however, is a rule that has to be honoured by its breach, in the hill districts particularly. Thus, when beating across the wind means that one has to rise and sink at an angle of 45 degrees every time, such a method has to give way. It also often happens when a fair breeze is blowing that to start beating up wind near a boundary march means that every bird will circle round and be carried by the wind out of bounds. Then the rule again breaks down. The object is to drive the birds that are not shot into ground to be beaten in the afternoon. This is best done by an up-wind beat of the zigzag order when the wind is light, and by a down-wind beat, starting from the windward march, when the wind is fairly high, but not so high as to carry the game over the leeward march. It usually happens that wind sinks about four o'clock in the afternoon, or before. If this happens, it is a good plan to draw off and go round to begin again at the leeward side of the ground into which the morning birds have been driven. The majority of the Welsh moors are so flat that they can be beaten in any direction, like those of Caithness, but the Highland moors are as steep as the Welsh hills are before you reach the heather ground. After you are once up in Wales, the walking is easy in all directions. The Highland hills are very like those of Wales, but with this great difference, the rises from the Scotch valleys are clothed with heather and are the best grouse ground. In Wales this rise is grass and fern-clad sheep farms, and often takes half a day's work, counting work as human energy, to surmount before shooting begins. For this reason Providence created the Welsh pony.

The grouse have a very curious habit in the wet weather of affecting the wettest and wildest parts of the moorland. Then, and only at that time, you may find them mostly on the flat floe ground, where every foot of peat is a miniature island, and where there is no shelter whatever from the storm. This is probably because the grouse do not mind rain upon them,

but do very much mind brushing the wet heather with their feathers. At such times grouse are generally wild, for they will not "squat" and hide, but run very much. Then they usually have very good scent, the dogs find and point them a long way, and then draw on and on after them as the grouse run ahead. It is nevertheless just possible to get good shooting by two guns going well ahead, very wide of the dogs, and coming back to meet the point. It is the sun, not the wind or the wet, that makes grouse hide in the heather, and probably the reason is that they were originally an Arctic species, and can stand cold better than very hot sun. In support of this view it may be said that grouse disease seems to disappear in very cold weather, and moreover the red grouse are, in everything but feather colouring and the white moult of winter, the same as the willow grouse—an obviously Arctic race.

Amongst the methods of killing grouse that have almost died out are first "becking," second "kiting," third "carting," fourth shooting them upon the stooks, and a variety of other devices for which the gun was not used, such as snaring and netting.

Some of these methods of shooting had a great deal to recommend them. First of all, "becking" is the art of hiding and the skill of calling the grouse in the early morning, when this proud bird, exulting in his superabundance of energy rises into the air and crows defiance. He is quite ready for battle, although it may not be the breeding season; for they "beck" in August, as the author has often seen and heard through an open window as he lay in bed waiting for the first breakfast-bell. The loss of "becking" is the loss of an automatic destruction of the most unfit, namely the old cocks, which are the only birds that will accept the autumnal challenge, and come to make things hot for an unseen rival, whose unrecognised voice sounds as if he had no right there.

"Kiting" has little to recommend it, except that it too is an automatic preservation of the hens. They for the most part will not lie under the kite, but make off at its first appearance upon the horizon. The stronger and bodler cocks

seem to delay matters until the thing gets right above them, and then they too become scared, but dare not rise. Thus they get kicked up and shot when the dogs can find them, which is not always. When they are up, they twist under the kite like a snipe, and are then more difficult to kill than by any other sporting method; for they not only have a snipe's twist, but about double their own usual pace, exhibiting what the falcon will show any day of the week—that when we think birds in a drive are doing their level best they are in reality taking things easy. The writer has shot at driven grouse with a falcon in actual chase. The grouse was seen to be approaching some distance, perhaps 50 yards, before it crossed. There was no time to shoot in front, and upon turning round it was seen that both grouse and falcon were already out of range, but there was a high wind blowing at the time this happened on the "tops" at Farr, in Inverness-shire.

"Carting" grouse is a poaching trick, based upon the knowledge that the birds take very little notice of a cart, even when they will rise a quarter of a mile away from a man on foot. The shooting is done from the cart.

Shooting grouse on the stooks has only this in its favour: it pleases the farmers. It is a butchery of those killed and a waste of many wounded. But to hide up and shoot grouse as they come into the oat-fields, whether uncut or in stook, is good sport. The birds do not usually travel as fast as in grouse driving, but they are quite as difficult, because they come so unexpectedly and silently. To make the best work, it does not do to trust to hiding behind a wall, or on the other side of a stook, because the grouse are as likely to come from one direction as the other. The best plan is to build a grouse butt with the oat stooks, in order that the shooter may straighten his back; for nobody is so expert as to be able to shoot well from a crouching position, although kneeling is just possible, and most uncomfortable.

Another form of grouse shooting used to be called "gruffing" in Yorkshire. It was common everywhere, although

it may not have a name elsewhere. The method was for a single gun to approach hillocks on the shady side and walk round them to the sunny side, when grouse that had long become too wild to approach openly would often lie and afford good easy marks by this method. This is only workable on nice sunny days, and only practicable as late as October and November between 10 a.m. and 2 p.m.

There is a wet-day method by which the author has killed a good many grouse. It is with a retriever to walk the roads that traverse the moors, or, better still, to ride a shooting pony along them. The wildest grouse will sometimes take no notice of a passenger along the well recognised roads, and they must be very unreasonable indeed if they mind a mounted man. Your retriever will find all the grouse on the windward side of the roads, and they will generally rise within shot. Why they should affect the roadsides in wet weather is not so easily explained, but probably it is that they prefer to sit on the roads themselves, where their feathers are not in contact with wet heather. If so, they just move off in time not to be seen by the coming traveller.

It has been said that grouse lie better to a black-and-tan and to a red setter than to parti-coloured dogs in which white prevails. There is no truth in this in a general way. After white dogs have been used until grouse will no longer lie, they will often lie to either a black-and-tan or a red dog, but only for a day, and only a few of them for that short addition to the length of the dogging season.

Possibly they take the black-and-tan for a collie, and the red dog for a fox. On one occasion the author saw grouse treat a red dog in a way extraordinary anywhere, except in the west and north of Scotland and in Ireland; but this was in the Lowlands of Scotland, where the grouse were wild by instinct. The birds were seen to be standing up in front of the pointing Irishman and flicking their tails in his face, and even when the dog drew on they merely just kept their distance, still flicking their tails. There was not the slightest attempt at hiding. Probably this is the method they have when

approached by a fox; it differs greatly from the behaviour of the average grouse before the man and the ordinary dog. Then crouching and creeping are characteristics of the race, unless they are of the wild sort, when standing up to look for an enemy is habitual, and flying upon sight is characteristic.

[Since writing the foregoing remarks, Mr. Charles Christie, of Strathdon Estate Office, has very kindly, with the assent of Sir Charles Forbes, made a search for the oft misquoted records of the Delnadamph bag of 1872. The bag was 7000 birds, not brace, and 1314 brace of these were killed over dogs in five days by four guns, whose best effort resulted in 435 brace. The guns were Lord Dunmore, Lord Newport (now Lord Bradford), Mr. George Forbes, and the late Sir Charles John Forbes.

Sir Charles Forbes' Edinglassie moor yielded 8081 birds in 1900.

Probably the record bag over dogs was the 10,600 grouse killed at Glenbuchat in 1872, where Mr. James W. Barclay (the owner) very kindly informs the author that driving was not started until after that year, whereas the greater number were killed by that plan at Delnadamph in 1872.]

THE LATEST METHODS OF PRESERVATION OF PARTRIDGES

AT the present time there are in operation many more ways of preserving partridges than ever before. Indeed, the history of preserving these birds up to about 1860 could hardly be written for lack of material. For some strange reason, at the period when stubbles were cut long (and the author has shot in them a foot high as lately as 1870), and when partridges sat so close to the points of dogs that to all appearances they could have been easily exterminated, they nevertheless seemed to require no artificial assistance, and even no designed limitation of the reduction to the breeding stock. Perhaps it was that the close crouching of the birds in good covert was the natural method of assuring safety, and it may be that birds that could escape detection by the dogs could also escape it by the foxes and the vermin.

The wilder the game is, and the more it runs, the more scent it gives out to denote its presence to dogs; and with guns ahead, the birds that flush wild do not escape in driving, so that increase of wildness is not all in favour of the game even upon shooting days, and for the other 360 days of the year may possibly be against them, and in favour of the vermin that hunts by smell.

Whether this protection by the wits assists birds on their nests at all, and if so, as much as the loss of scent does, is too wide a question to enter upon here. It is only necessary to remark upon that subject that partridge preservation is to be divided, broadly speaking, into two systems: first, that which protects birds against foxes; second, that which is not called upon to add this heavy duty to the keeper's ordinary business.

Roughly generalising, it is only in Norfolk and Suffolk where the keepers are not troubled with the fox question, and consequently it is only there that partridges can be safely left alone to find their own salvation. But this system can go too far even in those favoured counties, and naturally we find energetic shooters who try all round, declaring that Norfolk and Suffolk are "played out." As a matter of fact, the very ease of preservation in those counties has done them a great deal of comparative injury, because, while they have been going back, or at least standing still, other counties have been going ahead in a wonderful manner. Probably the progress made in Nottinghamshire, Hampshire, Wiltshire, and Cambridgeshire is far greater than anything done in the Eastern Counties, compared with what the respective stocks were in those districts twenty-five years ago.

The first phenomenal partridge preservation and the first break away from the system of letting birds preserve themselves occurred at Elvedon in the sixties of last century. Then large numbers of partridges were reared by hand on that estate, and at the same time, or a little later, a great many people began to rear partridges by hand. One of these was Lord Ducie, in Oxfordshire. The plan adopted there was to exchange pheasants' eggs for those of partridges with anyone who would bring the latter; consequently, it may be said that Lord Ducie was one of the first men to prefer partridge shooting to covert shooting. Now, on the contrary, a very great many people set the partridge up as the first game bird, and his popularity is growing.

But to return to the hand rearing of partridges: the difficulty of this business is twofold. First, it is generally believed that the birds must be fed with ants' eggs to make a success. Second, it is asserted that tame bred partridges "pack," and that without old birds to lead them these packs are likely to travel for miles and be lost to those to whom they belong.

The first charge against hand rearing is not exactly true, because Lord Ducie's keeper succeeded in rearing large quantities of partridges without the use of ants' eggs. The author as a boy and in an amateurish way reared birds about the same period,

but by the use of ants' eggs, and consequently that experience does not go for much, because there is no difficulty in the task where plenty of these insects are to be found to feed the birds entirely for the first six weeks.

The trouble arises when there are some ants' eggs but not enough to go round, for this food has the effect of setting the young birds against everything else. Lord Ducie's partridges were mainly fed upon meal of some kind, although the writer forgets what it was. Another precaution that was taken was to distribute the coops very widely along the sides of corn-fields, and there is no doubt that this plan obliged the birds to hunt for insect food at a much earlier age than if they had been kept upon ants' eggs. Unfortunately, the chicks will not eat the ants themselves; otherwise the getting of ant-hills to cart to the birds would go three times as far as it does, for there are generally twice as many wingless ants as there are eggs to every nest.

The second charge against these tame birds is that they grow too wild in packs and fly right away, and this is a fact beyond all dispute. However, it has been said that cock partridges will sometimes take to young birds reared by hens, if the bachelor partridges are themselves penned in the neighbourhood when the little chicks are first carried from the sitting boxes to the coops. There appears here to be a possible future for hand rearing without its old disadvantage of packing. Probably most people will think that the cock partridge is better occupied in assisting his own proper mate to raise the very big coveys that are now manufactured by the joint efforts of birds and keepers.

This partnership arrangement came about when the keeper at The Grange discovered how easy it was, with proper precautions, to make up the nests of *sitting* partridges to 20 or more eggs. The result of this was that, although eggs had for many years been changed during the laying period, to effect cross breeding, it now became possible to employ the partridges themselves to do the work of foster-mothers—a vocation that farmyard hens had only half performed hitherto, and done their

part badly. All destroyed nests, as well as those that looked likely to be destroyed, could now have their eggs hatched without the intervention of those fowls that always want to start laying again just as they are most desired to keep their foster game chicks from "sowing wild oats."

Obviously The Grange plan would not have been of much use had not a very careful record been kept of when each bird began to sit; for it was necessary that eggs added after the laying season should only be those in precisely the same advanced state of incubation as those already in the nest. Someone has said that the cock bird goes off with the first chicks hatched, and leaves the hen to manage the other eggs; but this is not so, and if added eggs are twenty-four hours behind the others they will generally be left unhatched in the nest.

Probably all the great partridge estates have advanced as far as this. It marks the time at Holkham in the north of Norfolk as well as Orwell Park in the south of Suffolk. But although these two estates are hard to beat in the matter of big days, the partridge yield is not the highest per acre on either of these celebrated estates, and never has been. At Holkham about 8000 birds on 12,000 acres is the most that has been done. At Orwell 6000 birds upon 18,000 acres is not regarded as bad. Both of these estates are considered the best possible land for partridges, and both of them have also the advantage that foxes are particularly scarce in the districts of Norfolk and Suffolk. No Hungarian birds have ever been used at Holkham, although eggs are exchanged for fresh blood. At Orwell this method is also practised, and as many as 1000 eggs in a season have been obtained from Cumberland and Hampshire, by exchange with Sir R. Graham and Lord Ashburton. Nests are made up to 20 eggs at Orwell, and occasionally eggs are placed under hens until hatched, when the young birds are given to old partridges on the point of hatching out. But here the appearance of the old sitting birds is relied upon to indicate when that time comes. Thus, when two partridges are seen sitting on the same nest, it is taken for granted that the egg-chipping stage has been reached.

Holkham has been the most famous partridge estate for a century, but much of this fame is owing to the fact that it is a very large estate, naturally well suited for game, and especially for partridges. Besides this, it was one of the first upon which partridge driving was practised, and this method seems to have raised the stock by double. At the same time, the system of only using the same beat once in the season limits the kill enormously.

This estate has beaten all previous records for a single day's shooting by a bag of 1671 birds in 1905. Naturally the thought at once occurs that the Holkham *must* be the best system; but when we understand that this beat is made upon 2000 acres in 20 drives to 8 guns, and that this is the total season's bag of the very best beat in the very best partridge land in England, and remember also that on 8000 acres of the best land only 4749 birds were bagged as the whole season's work, but all in four days, the question arises, What would Holkham do in the season if it were subjected to the most modern methods of preservation?

Another splendid estate for game, and one similar to Holkham in size and dryness of land, is Euston. The Duke of Grafton has in a letter to the *Times* repudiated the idea that partridges are preserved at Euston by the plan adopted there for pheasants. On the contrary, the partridge preserving at Euston has been of the same character as elsewhere in Norfolk and Suffolk. The ill-named "Euston plan" was not wanted there for partridges, and was applied only to pheasants, and to them not as has been very often described. The great difference between the Euston pheasant system and the latest method with partridges, erroneously described and applied to Euston, is that in the case of pheasants at Euston the birds are not kept sitting on sham or bad eggs while their own are being incubated. They are, according to the Duke's letter, allowed to sit on their own eggs, and when the latter are chipping they are given more eggs in the same forward condition—such eggs as have been picked up out of destroyed nests.

The system that is not employed at Euston, then, either

for partridges or pheasants, is that in which the period of incubating is *shortened* for the wild bird by picking up all her eggs as laid and incubating them under barndoor poultry.

By this latter plan the period of incubation of any individual bird can be pretty nearly what the keeper wishes it to be, and its length will greatly depend upon the number of foxes, the nature of the soil, and the situation of the nests. The success of this system on Mr. Pearson Gregory's property in the great fox-hunting county of Lincolnshire was perhaps the origin of ill-naming the plan after Euston, and came about because of Mr. Pearson Gregory's tenancy of Euston.

That the minor assistance should have enabled 6000 wild pheasants to be killed at Euston per annum is sufficiently remarkable, and is a fact due to the objection of the Duke of Grafton to hand rearing, and to the initiative of the clever Euston keeper, who found a middle course that turned out even better than hand rearing. But in the absence of foxes, as Lord Granby has remarked, the soil breeds game at Euston, and it is not to be supposed that the same system would suffice either upon a clay soil where rain could drown out the nests or where foxes abound. For such districts the essence of the new plan is the shortening of the incubating period, or the "clear" egg system. The clear eggs used are necessarily, and unobjectionably, pheasants' eggs, as those of partridges should not exist, and when they do exist are discovered too late to be of any use for that season.

It was probably in the Newmarket district of Cambridgeshire where the system of the short incubation period for partridges was first put into practice; for, as has been observed, there is no such great need of it in the sandy soils of Norfolk and Suffolk, which drain themselves, and besides have not to contend with foxes. Possibly Stetchworth was one of the first, if not the actual first, estate where it became a recognised practice to take eggs and keep the birds sitting upon clear pheasants' eggs until a number of 25 partridges' eggs were chipped and ready to place under the sitting bird, which might

have been sitting but ten days instead of the usual twenty-four. On various occasions this plan has been described as if it were new, and an emergency plan, at Stetchworth in 1905; but that is by no means the case, as it is the plan by which the most hostile forces of nature in the shape of bad seasons have been rendered comparatively harmless. Any plan that permits bags of about 500 birds and upwards per day to be made for many days, and in spite of such seasons as the last five, three of which were wet and the fourth and fifth bad with thunderstorms, must be wonderful.

Not content with the short incubation system, Lord Ellesmere has tried every other at Stetchworth. Hungarian partridges in small quantities have been attempted, and also the French system of preservation by pairing birds in pens. When the authorlast heard about the latter system, the results were not to be compared for a moment with those of the real wild birds assisted by the short incubation plan.

Another place where all the systems have been tried (except the French, as far as is known to the writer) is Rushmore, in Wilts, where Mr. Glen Kidston has achieved a revolution in partridge preservation and vermin killing. He is a believer in making it the keeper's business to keep down rats, and as a matter of fact that is another lesson that Norfolk and Suffolk might learn from less naturally favoured counties. Where this business is left to the farmers it is not properly done. As the keepers have killed nearly 5000 rats in a season at Rushmore, it goes without saying how the partridges' eggs would have fared had these horrible creatures been left to raid upon them. Unquestionably the greatest service that keepers can ever do to farmers is to keep down rats. Hand rearing and Hungarian eggs have been largely employed at Rushmore, where there are plenty of ants' eggs for all comers, and plenty of space in which to distribute the partridge coops in turnip-fields, and it is said not close enough together to make "packing" a thing to be feared.

The principle that numbers bring disease is not feared at Rushmore, for although as many as 1200 hand-reared birds

were lost in a few days in 1904, the next season saw better results than ever.

The Duke of Portland has converted his Welbeck property of light limestone subsoil into a great partridge district, and has employed large quantities of Hungarian birds to effect the change, having turned out as many as 1200 birds at one time. Like Rushmore, the Duke's property is not well watered, and there is no doubt whatever that running or stagnant water is not necessary to young partridges when at large. At any rate, there are a number of very fine partridge estates on which it would be quite impossible for the birds to drink, except the dew, until they were able to delight in flights of three-parts of a mile. At Moulton Paddocks, near Newmarket, Mr. F. E. R. Fryer, who is as admirable as a preserver as he is as a shot, supplies pans of water in his fields for the partridges. He adjoins those great shootings of Chippenham and Cheveley, and as he has scored nearly 1½ birds to the acre, or 700 birds on 500 acres in the year, his management must be beyond reproach. That is more than twice as many birds per acre as at Lord Leicester's fine place, Holkham; but then with such neighbours as Mr. Fryer has, it is a less difficult task to keep a very high stock on a small than upon a large place.

In Oxfordshire, Mr. J. F. Mason, of Eynsham Hall, has reverted to the system that his neighbour Lord Ducie practised in the Chipping Norton district in the sixties of last century. That is, he breeds large quantities of partridges by hand; but the wet destroyed his chances in 1905.

In Scotland, Sir John Gladstone has had admirable success with Hungarian eggs, and Sir William Gordon Cumming has tried the French system on a larger scale than most people. At Stetchworth the partridge keepers have no pheasant rearing to do; and of course this is the case where there are no pheasants reared by hand, as at Euston in Suffolk and Honingham in Norfolk. At the latter place, Mr. Fellowes, lately Minister of Agriculture and a great farmer, makes his estate of 4500 acres yield nearly 3000 partridges, and also

1200 *wild bred* pheasants. In the New Forest, Lord Montague manages to kill about 4000 more pheasants than he rears by hand, and there is no doubt that the latest phase of preservation is directly opposite to that of ten and fifteen years ago, when the keepers did everything possible for the pheasants and practically nothing for the partridges.

Crosses with the Mongolian pheasants have been tried in many places, and they are everywhere reported easy to rear,—some people have said as easy as chickens,—but they have not been tried, as far as is known to the author, in the wild state, and whether the ease of rearing by hand will be confirmed in that state of nature will make very much difference to the future of pheasant preserving. On the other hand, several people have reported that the cross-bred Mongolian birds drive away the common birds from the food, and for this reason they will not be continued in at least one quarter. At the same time, they are said to fly higher than the birds we have already, but that again is not much of a recommendation, since our pheasants can be made to fly high enough by judicious handling, and no pheasants will fly high unless circumstances compel them to do so.

The author believes that the map system of partridge preservation was originated by Marlow, the keeper at The Grange, in Hampshire, and it is entirely due to this plan that the Euston system with the pheasants, and the short incubation system with partridges, as practised at Stetchworth, was made possible. The map is an important item in the organisation of preservation on this last-named estate, where, amongst other eggs that are carried out to partridges sitting on unfertile pheasants' eggs, are a number of chipped Hungarian partridges' eggs. This plan of mixing the Hungarian eggs with those of the home birds is the best and surest way of effecting a cross of blood in the following year.

It would not be wise to compare Stetchworth bags with those of Holkham, because the conditions are so different. At the former a day consists of a dozen drives, at the latter of about 22, or that was the number when the record 4749 in

four days was made. Then Lord Leicester and Lord Coke appear to select guns for their deadliness, whereas Lord Ellesmere generally has a family party. Besides this, probably few people would consider the soil of The Six Mile Bottom district, which is the adjoining shooting to Lord Ellesmere's Stetchworth property, to be equal to that of Norfolk and Suffolk as natural game country. At any rate, even in the 1905 dry year, a great many partridges were driven off their nests by a three days' rain and deserted, some of them entirely, others only for a few days. Here the system was equal to the occasion, for those that came back to the clear pheasants' eggs were given chipped partridges' eggs to go off with, and those that did not had only deserted bad pheasants' eggs in some cases, and when it was otherwise the keepers were there to save the situation, for the nests and their low situations were indicated on the map.

It has been shown above that even hand rearing cannot be relied upon, as in Oxfordshire, to save the situation in spite of adverse elements; but the latest phase of partridge preserving is a combination of three methods—namely, 1st, the introduction of Hungarians; 2nd, the French system; and 3rd, artificial incubation. It has often been affirmed that the French system has failed badly in this country, but probably that is entirely due to want of carefulness in matters of the smallest detail. At any rate, Sir William Gordon Cumming makes each penned pair of Hungarians produce an average of 19 young. This is so remarkable and so satisfactory that it must be related in detail. In the first place, the matrimonial relations are never forced, but those birds that have refused to mate in the big pens where they have been since November are turned loose. The affections of the others having been under observation, each pair is removed to a circular pen of 27 feet diameter. It has been observed that when a hen bird dies the cock will generally take on her duties. The success obtained by this method of only three years' standing is already quite wonderful, and the season of 1905 resulted in doubling the bags, and also in a

much larger breeding stock being left. Sir William Gordon Cumming believes that given good weather the bag will again be doubled, so that there is reason to believe that there is, after all, no "best" about the new systems, but that a combination of all may be better than any. Sir William Cumming adds that after doubling his bag two years in succession he has left in the second more birds to breed than he usually commences the shooting season with.

The following are explanatory letters from Sir W. Gordon Cumming and his keeper:—

"ALTYRE, FORRES, N.B.
"*26.* 1. 06

"DEAR SIR,—I have adopted what is called the 'French system' of partridge rearing for the last two years. Formerly I used to buy 20 couple of Hungarians and turn them loose at different parts of my estate. I could see no appreciable difference in the result. I have now built a pen, 40 by 60 yards, into which I turn 60 couple Hungarians male and female in equal (?) proportions about the middle of November. A man is told off to feed and look after them. The birds are 'brailed' before being put in—*i.e.*, a small specially constructed strap confines some of the upper wings—sufficient to prevent flight. The pen is supplied with gravel, bushes, water, etc., turfed 3 feet all round, and plentifully trapped outside. Rats and cats are to be dreaded. About the pairing-time the man in charge is constantly on the watch for any couple who appear to be inclined to matrimony—it is a mistake to think that any two birds will marry, they are extremely particular on the point, and many remain celibates altogether. Any amorous couple is quietly herded into one of two pens which are in the enclosure, and at once transferred to a separate establishment, where are some 30 small circular pens, about 27 feet in diameter, and there they reside till eggs result. The first lot of eggs is usually transferred to a hen; the next batch is looked after by the partridges themselves; occasionally a hen dies, when the cock will nearly always take up her duties. Any birds that refuse to pair are simply turned out. I calculate we averaged 19 young birds to every couple so treated last season. I commenced serious shooting late in September, and more than doubled my bag of last season, leaving on November 10, 1905, a larger stock of birds at expiration of the shooting

season than I have usually commenced with. Of course we are largely dependent on fine weather at the time of hatching, and have been very lucky the last two years. If the fortune continues this year, I expect to nearly double my bag of last year. I have probably given you some information of which you are already quite aware. If I have neglected any point, I shall be glad to write you further; or if you would like to communicate with Mr. Bell, Gordonstoun, Elgin, N.B., my head keeper, he would doubtless be able to make clear certain points that do not strike me at present. I may mention that I have taken almost entirely to driving birds—a system rarely, if ever, adopted on many estates elsewhere in the neighbourhood hitherto, and with marked success within a sporting view, and as regards result of the day. But we have much to learn in this respect, and I think a little more experience would have been beneficial in many ways.

"My Hungarians are supplied by Major C. Ker Fox, and have always turned up in good condition; any found dead or weakly on arrival, he readily replaces. I have shot Hungarian birds in their own country, and never thought I could detect any difference between them and our own: last year's batch, however, were much redder in colour than any I have previously seen.—Yours very faithfully,

"(Signed) W. GORDON CUMMING"

"GORDONSTOUN, ELGIN
"*Sept. 29th*, 1906

"G. T. TEASDALE-BUCKELL, Esq.

"SIR,—As regards our method of increasing partridges, I will try and explain, and answer your questions as well as I can. I have no hesitation in saying to get up a large stock our system is the best. I say this after many years' experience with partridges.

"1. Do I pick up first-laid eggs? *No*, unless she lays more than 24, then I reserve them for another nest; sometimes I allow them 26, not more.

"2. Yes, she would lay again; but I believe strongly in early chicks. [This is an answer to a question as to whether the hen would lay again after beginning to sit.—The Author.]

"3. I don't take them gradually, or at any time, unless they lay 30 or 40, as they sometimes do; then I take them after they have laid 24, or not until they sit or brood.

"4. Our success this season (1906) is almost 19 to the brood.

"5. I have not tried an unpaired cock partridge to take chicks, but I think he will, as the ones I tried had lost their partners long before I tried them: this was always successful.

"6. How to obtain the average turn-out of chicks. Some birds lay more than they are able to hatch; these eggs are given to barndoor fowls along with other eggs that are laid outside, by wild birds, on roadsides and dangerous places: these eggs are given to the fowls *only* on the *days* that the *partridges* in the *pens* start to *brood*, so that they hatch out at the *same time*. Say one hen broods June 1st, you can make her up in the way I have stated by setting 4 or 6 eggs on the same date under a fowl, according to the number (as you like) the partridge has. You can put more eggs in below fowl next day, if 3 or 4 partridges have then brooded. This is the great advantage: there is no waste of eggs on a partridge estate. I could turn out 30 chicks to the brood, only I think 18 or 20 quite sufficient. Without outside help at all, with eggs that are over-laid in pens, the coveys will easily run from 16 to 18 to a brood. This is not a hay-growing place, but if any nests were going to be spoiled by the cutting of hay they can all be put to account by this system.

"In wet weather you can turn out chicks on dry ground.

"On large estates I would give each keeper 10 or 12 pens for the paired birds; this would give them an interest, and greatly help their show on shooting days.

"Sir William must have grasped a wrong idea about me taking away her [partridge's] first consignment of eggs. I interfere as little as possible with them and their nests at that time. To take away their first eggs would throw them too late; this would mean probably three weeks later, or thereabouts.

"When I said I have had a large experience with partridges I did not mean in this system, but I have always been among partridges and have seen lots of plans tried, but I am convinced this is the best.—I remain, sir, your obedient servant,

"(Signed) ROBERT BELL"

One word must be added to the above letters: it is not safe to rely on imported Hungarian, and home produced, partridges' eggs hatching in the same number of days; the former will often take the longer.

PARTRIDGE BAGS AND DRIVING

IN the foregoing chapter it has been shown to what point the greatest bag of partridges in a day has arrived in England. But more than double the number of these birds has been killed in one day in Bohemia. The biggest bag there has been 4000 in one day. The method of preserving adopted there is to make an outlying estate serve as an assistance to an inner preserved portion. But it is not, as has been thought, to catch up birds and bring them in for a day's shooting, as was done by Baron Hirsch in Hungary. The birds may be caught up and brought in to breed, or the eggs from outlying ground may be brought in to fill up nests. In either case that is merely the English plan; but the author is assured that where the biggest bags are made no removal of coveys in the shooting season has occurred. The birds are fed in the winter, and herein lies the principal difference between our own and the Continental system of preservation. The snow there lies for weeks, and to keep the birds alive wheat is given to them; but the Hungarian and Bohemian preserves conclusively upset one notion that has got firm hold in this country. They beat us very easily in partridge productiveness, and they do it without driving. Of course Baron Hirsch's big bags were made by driving, but his was a system foreign to the country, and has been fairly beaten by different methods that are generally employed. The big bags are mostly made by a system of walking up the partridges in the corn. The author, then, is constrained to look for other than driving reasons for the increase of partridges, and he wholly agrees with Mr. Charles Alington in saying that the reason driving

increases partridges is because preservers who drive the birds are not satisfied with the stocks of partridges that previously did satisfy them. They cannot have any shooting at all unless there are enough birds to give a day to half a dozen friends; whereas before one covey gave sport, and would be followed all day by a couple of guns, until only its remnant was left to stock a farm or an estate. The author also agrees with Mr. Alington in saying that it is not because old birds are killed by driving that this system succeeds. Even where driving is practised, the keepers on some estates net the birds after the shooting season in order to break the necks of the old cocks and let off the young birds, which is quite enough proof that driving is not an automatic selection of old cocks. The latter should be killed, for the reason, that they occupy for themselves five or ten times the ground that will satisfy a young pair of birds. On one of these netting expeditions, Coggins, the clever head keeper at Acton Reynold, caught a woodcock, so that even a night bird may make a mistake in its most wakeful hours.

Mr. Alington described how one pair of very old partridges took sole possession of a fence and made their nest, which, by him, old birds are supposed to make earlier than young ones. He had these two birds destroyed, and then there were ten nests made in that fence. This partridge shooter also believes that no partridge lays before 10.30 a.m., and that she lays every day, and an hour or so later in the day with every egg. Probably this is not a fixed rule. It would involve a midnight egg, or a day missed, when there was a full nest to be laid.

Then it has been said that it is the "packing," after driving, that does the good, of course by initiating cross breeding; but for forty years at least gamekeepers have been changing eggs from nest to nest and from estate to estate, so that packing would be merely re-mixing those that had already been separated by the gamekeepers.

The greatest assistance given by driving is probably the greater freedom from wounds of the driven bird. The old bad days, when we killed all the birds that would lie, and shot at

all the others, were bad, because there was no other way of getting a bag of wild birds; but probably if nobody had ever tried to do so there would have been plenty of partridges. In other words, it was bad shooting that destroyed the stock. But more than this, partridge driving is liked; it has caused much greater attention to be paid to the partridge than ever before, because it is so much better sport than turnip-trotting, and so much more bag-filling than shooting over the majority of show-bred or show-dog crossed pointers and setters. It takes a very good dog indeed to please in a turnip-field and to render it unnecessary to form line to beat up the partridges. Besides that, driving is a social amusement, whereas shooting over dogs is only good when there are but two guns or less. The popularity of the big day extends to beaters, farm hands, and farmers, whereas for the old method these people were merely tolerated. Toleration did not assist preserving; popularity does so.

Although a swerving covey of English birds will present a task fit for a king, there are very many very easy driven birds, including the majority of straight-coming Frenchmen. Besides this, the position of the shooter makes them easy or difficult as the case may be. Put too close under a high fence, the birds are difficult; put farther back, they swerve, or turn back over the beaters. When standing up to quite low fences, the chances are very easy, and when the sun is in one's eyes they are too difficult for sport. The most beautiful shooting is when some birds come over, and some between, a row of high elm trees such as one frequently sees in the Midlands, but less often in the Eastern Counties.

There is no more beautiful sport than shooting partridges over good dogs, and it is easy to get them good enough for the work in wild country, where they are almost exclusively employed, but it takes brains as well as nose and pace for a dog to be a help to the two guns in turnips a couple of feet high, and such as contain a hundred thrushes, blackbirds, leverets, rabbits, and pheasant poults to every covey of partridges. It is true that if shooters in line, for sentimental reasons, have a

pointer running loose, they may call it shooting over dogs, and any sort of animal will do for that, even if he is a dog show Champion; but that is not what the author means by shooting over dogs.

If you have a line of guns to tread up the game, dogs are superfluous. If you have dogs that can find everything, then a line of beaters is superfluous, and besides in the way, too, for it makes birds wild.

Noise is often said to make partridges wild, but this is only partially true. Noise in any one direction, such as talking, generally makes them fly, but any noises heard from all directions simultaneously makes them lie like stones.

No country is so difficult to drive as one with small fields and high hedges, especially if it is also hilly. It is almost impossible to make the partridges know that there is a line of beaters outside of their own little field, and they are very likely to go out at the flanks and swing back behind the beaters in the next field.

That the fox is the worst partridge poacher in the nesting season is not questioned by those who know; but the plan described in the previous chapter is a very good and the only way of securing many partridges in a fox country. Nevertheless, this plan has been written down in the press, obviously by interested people, who appear in all sorts of disguises in the interests of game-food makers, who are aware that if the Euston plan of pheasant preserving and the Stetchworth plan of partridge preserving were to be commonly practised, it would be all over with game-food manufacturers. The author first described the Stetchworth plan some time before Mr. Alington's book appeared, in which he related Mr. Pearson Gregory's wonderful success with partridges in the middle of the Belvoir country, where foxes abound. In place of this safeguard against foxes, futile attempts have put forward evil-smelling mixtures to protect the nests; but, as Mr. Alington and Mr. Holland Hibbert have shown, when foxes take one doctored nest they then hunt *for* the smell, and in the experience of Mr. Alington the mixture was successful the first year, but in the next all

the dressed nests were taken and the others left. That a large number of keepers may approve of evil-smell systems, and disapprove of the Stetchworth partridge, and the Euston pheasant, systems, has no weight with those who know that there are wheels within wheels, which can be specified if necessary.

That there are smells which destroy or negative others, the author is sure, but he has no belief in drowning one by the strength of another. No retriever can find a dead bird if a man stands close to leeward of the latter and to windward of the dog's nose. Out of politeness to our race, we may consider this negatives the partridge scent and does not merely drown it, but then the deer do not support that view, and can smell a man much farther off than a foxhound can smell a fox. The question arises, What is a strong smell to a fox, a dog, or a deer?

A gamekeeper can (because he has done it at Harlaxton, in Lincolnshire) look after 1500 acres of partridge ground and get hatched off by the Stetchworth plan 1200 eggs, and do it single-handed, so that the expense that the interested critics of this system talk of does not exist.

The fox has just been condemned as a poacher, but all the same he is a great friend of partridge preservers, if they would only look ahead. The fox is the only influence in this country that prevents half of it becoming poultry runs. He takes his toll, and deserves it. Land will not afford more than a certain amount of insect life, and young partridges cannot live without it. If it were not for the foxes, nearly every farm and field would be a chicken run, and consequently wild bred partridges would be impossible.

On the other hand, if it were not for the game preserver, hunting would also be impossible in provincial countries and where money is scarce. No foxes could live if the fields were devoted to poultry. The farmer's charges in the absence of game would cause three-parts of the hunts to be abandoned in face of enormous poultry bills. Half the quarrelling over game and foxes is exaggerated in the telling, and the rest is

caused by a misunderstanding of mutual interests. Outside the Shires, and perhaps Cheshire and Warwickshire, hunting could not exist without the game preserver; and outside East Anglia and the grouse moors game could not exist without foxes, more especially partridges could not, at least not for long.

It is quite a mistake to suppose that grey partridges are interfered with by the red legs; of course, where dogs are used, red legs are not a blessing, but everywhere else they appear to greatly increase the sport. The two varieties often nest side by side, but the grey partridge cock would not tolerate any such proximity from his own species, so that the simplest plan of making two partridges grow on one acre is to have both sorts.

Straying away, in the winter and the spring, from cold or high ground, is a great and objectionable habit of partridges. On some estates nothing seems able to prevent it. In such cases the French penning system described in the previous chapter seems to be made on purpose.

The driving of partridges in flat country is very much more easy than grouse driving, on account of the hedges. They hide the beaters and the guns from view as both go to their places for short drives. But these same hedges often prevent proper flanking for long drives, and there are a thousand pitfalls ready for the inexperienced driver of partridges to fall into. Of course the chief factor in all driving plans is the wind, if there is any. Success generally comes to those whose minds and plans are the most flexible; for a plan that would be best one day would almost certainly be the worst upon another.

In a short chapter on partridges in general it would be obviously impossible to go into the minute details of driving, or to specify as many of the pitfalls as have come to the author's notice. Broad principles briefly stated are all he has space for, and really almost everything else alters with the locality. First it is necessary to drive the birds with a view to their concentration. That is to say, every drive should be

arranged in such a manner as to make the next drive to it as perfect as possible. The guns, then, will be posted where they can do least harm to the next drive—not necessarily where they can do most execution in the one under consideration. Consequently, the choice of stands for any one drive must be regulated by the distance the birds at the particular time of year are likely to fly after passing and being scared by the line of guns. This distance will grow longer each week of the shooting season. In September birds that would be likely to drop in roots three fields behind the guns, might easily go six, seven, or eight fields in November.

It is impossible to drive partridges very far directly up wind, and it is almost impossible to turn them very much when going fast and high down wind. Roots are even more important to big driving bags than they are to "walking up." At least, without roots most of the birds will come together, and shooting will be quickly over in each drive, whereas, when partridges can be first driven into a turnip-field, and secondly induced to run, they then become scattered, rise in small lots, and give shooters and loaders a chance.

The nearer the guns can be placed to the rise of the partridges, the less distant the latter will fly. In a high fenced country noise is often essential to prevent the birds in one field going back over the heads of beaters in the next. The partridges generally decide where they are going before rising, or as soon as they are up, and consequently the flanks of your line or semicircle of beaters will be useless unless the birds know of them either before they rise or the instant they are on the wing.

Another point to be considered is, that partridges will not drive backwards and forwards over the same fence many times, and if it can be done, a fresh one should be lined for every drive. Often the nature of the ground and the disposition of the hedges will not admit of this. Ideal driving possibly only exists in the imagination, but if it can be arranged that for every drive there is a turnip-field to drive out of near to the guns, and another to drive into at the distance

of the birds' flight behind the guns, then particularly heavy killing ought to be possible in proportion to numbers of partridges present.

When there is no great amount of wind, backwards and forwards drives, with the guns shifted up or down the fence slightly each time, are very deadly with two sets of beaters. With one set only, on the contrary, the plan of taking the birds all round the beat in four or more drives, according to its size, is a good one, because it prevents either beaters or "guns" having long waits or unequal distances to walk. Excellent driving results have been obtained on an estate as small as 500 acres, but this would not be possible without big root fields.

The best sanctuaries for partridges, and those of greatest assistance to driving, are newly planted larch and fir coverts. Where estate planting is wanted, then by extending it over a series of years, instead of doing it all at once, it adds to the encouragement and to safe nesting-ground of partridges and pheasants too, but the necessity of wire fencing it against rabbits renders it of no use for ground game, which is all the better for both its true purposes. In a grass country partridges will remain and breed wonderfully well if about 5 acres of wheat are cultivated to every 200 acres of grass land. On just such land the author has killed two-thirds of a bird to the acre within twelve miles of Charing Cross on the north side.

Some of the Hungarian and Bohemian bags have been as follows:—In 10 days' shooting 10 guns killed 10,000 partridges at Tot-Megyer, in Hungary, and the same season the first five of the ten days yielded 7020 partridges. This was on the estate of Count Karolyi. No birds were brought in from elsewhere, and the method adopted was *walking up*. But it was in Bohemia, at Prince Auersperg's place, where 4000 birds were killed in one day, which leaves Baron Hirsch's records, and all those of England, in the shade.

VARIETIES AND SPECIES OF THE PHEASANT

THERE are 21 so-called species of the true pheasant. Of these, 17 are only varieties, with practically no differences except in colour and size. Naturalists are not consistent in their classifications. If the 17 pheasants that include the common and the ring-necked variety are species, then all our fancy pigeons are species also, just as our numberless varieties of dogs are. The pouter and the fantail pigeons have more differences by far than any of these 17 kinds of pheasants, and the St. Bernard and the Japanese spaniel and Italian greyhound would all have been received as new species had their discoverers been naturalists. Indeed, the St. Bernard has structural differences from the others about which in any other class of animal naturalists would not hesitate for a moment. They would make a species of him for his extra toe—that is, for his double dew claw. But it does not in the least matter whether differences are marked in the index to nature as species or as varieties, since the former term has lost its original meaning, and no longer suggests a specific act of creation in the origin of things.

What matters is that the 17 varieties of pheasants are supposed to be capable of breeding together fertile offspring, no matter how they are mixed up.

But although crossing always increases size in the first few generations, and notwithstanding that every first cross amongst these 17 varieties of pheasants has been glorified in description, it is not to be expected that the cross breds maintain their glory in later generations. Unfortunately, they do not revert to one type or the other, but set up intermediate coloration.

There is no reason to suppose that the cock pheasant differs very much from the hen In the pigments within the feathers. The difference we observe is one of disposition of those pigments. In the hen the reds, the greens, the gold and purples are mixed; in the cock they are separated. In the 17 varieties of pheasants there are to be found cock birds which at every point of the feathering have the complementary colour to that which is in the same position in some other species. Even the dark edging of the feathers is in some races green and in the others purple. The backs are in some green, in others red; the breasts in some species golden, and in others green. One cannot object to the introduction of any of these 17 species so long as they are kept distinct. But we do not want our pheasants to look as variegated as a race of mongrels. The Mongolian pheasant is said to be more hardy than our own cross bred, and in that case it would probably suit us better as a bird of the coverts, but it drives away the other birds from the food, which is a good reason as well as its white wing coverts for not wishing to have it mixed with the home stock.

For some time it was believed that the Reeves pheasant would not produce fertile offspring from any of the 17 sorts typical of the common pheasant, but that is probably a mistake. Nevertheless, if it is true that the hybrids breed in the third season, any such deferred productiveness would not be likely to have the smallest effect on our pheasant stock, and consequently the Reeves pheasant can safely be turned out in the coverts without fear of changing the character of our good sporting birds. The same is true of the copper pheasant, which, in nature and Japan, exists side by side with the green-breasted versicolor, and does not inter-breed with it. As the versicolor breeds freely with our birds, and is but a variety in fact and only a species by courtesy of naturalists to each other, it is pretty certain that this copper pheasant, like the Reeves pheasant, can be safely turned loose in our coverts. But the Reeves pheasant is a great runner, and it is said that when he once does get started upon the wing he

is apt not to recognise the boundary fence, and may go 20 miles on end. If this is not an exaggeration, and probably it is, the Reeves pheasant would be a most objectionable bird. But in wild countries like Wales and Scotland, where there are hills and hill coverts, there seems to be no doubt that the Reeves would beat the English bird, not only in hardihood and self-reproduction, but also in flying to the guns both faster and higher than the common pheasant. It is a bird that prefers to run *up* hill, in contradistinction to the instinct of preservation that induces the type race of bird to run *down* hill. The Hon. Walter Rothschild has spent more time and money on the pheasant family than anyone else, and probably he is the very best judge of what would acclimatise with advantage and what would not. With the reservation, then, that the author does not believe in still further mongrelising the half bred of our coverts, it is proposed to summarise Mr. Rothschild's opinion.

The pheasants form but one section of the family Phasianidæ, the second of the four families of the Gallinæ. The limitations of natural history are set forth by Mr. Rothschild when he says that structurally it is impossible to separate the partridges and the pheasants, and that the spur-fowls (*Galloperdix*) and the bamboo partridges (*Bambusicola*) form connecting links. How true this is may be gathered from the fact that Mr. Harting described a bamboo partridge in the *Field* recently as a cross between a pheasant and partridge. These birds have spurs, but then the author has seen a common partridge with spurs on both legs. The legs were sent to *Country Life* at the time, and the spurs upon them were sharp like a two-year-old pheasant's. Of the pheasants there are 60 species according to naturalists, divided into 12 genera. Of these, *Phasianus* with 21 species is the largest, and the only one which concerns sportsmen in this country. There are 17 of the varieties of the type pheasant, including the new species called after Mr. Hagenbach. There are 11 other birds called pheasants which properly belong to the peafowl. These include

7 peacock pheasants and 4 Argus pheasants, which, like many others amongst the 60 pheasants, do not fly well, and have no place in shooting. The true pheasants are distinguished by their long wedge-shaped tails and by the absence of a crest, but these have to be subdivided into the type birds that are really only varieties, and the four that are really as well as nominally different species.

These four are *Phasianus ellioti* and *Phasianus humiæ*, which are useless for sport. Then the copper pheasant from Japan (*Phasianus sœmmerringi*) Mr. Rothschild thinks eminently suited for the coverts. As it is a native of the same ground as the versicolor pheasant, and neither seems to damage the purity of the other, it may be accepted that its production in our coverts would not degenerate into crossing with the common pheasants. The other of these four species is *Ph. reevesii*, or the Reeves pheasant from China, with its 6 feet of length and, on rare occasions, 6 feet of tail. The worst that has ever been said of these two last-named species is that they fight badly and might drive away the other pheasants, but in the case of the copper pheasant the observation was only the outcome of its behaviour in pens. Mr. Walter Rothschild thinks this bird more suitable for mountainous cold districts than the common pheasant is, and that it should be given the preference in Wales and Scotland, as altogether a hardier bird than the true type pheasant. In this opinion he agrees with the late Lord Lilford, who was by far the best authority of his time. Mr. J. G. Millais wrote of this bird from having shot it at Balmacaan, on Loch Ness, and at Guisachan, near Beauly, in the same county. At the former, then the late Lord Seafield's place, he found the bird a fraud and a failure, as in the open flat coverts it ran more than it flew, and when it was forced into the element it can make all its own, it flew low and gave no sport. But at Guisachan, Lord Tweedmouth's place, Mr. Millais had cause to regard the bird as the finest of all the game birds that raced to the guns over the mountain pines. He described it as leaving the common pheasants and the blackcocks flustering along behind at about half the pace of this king of the air, or comet of the woods.

Truly sportsmen cannot read Mr. Millais' account without envy. But, besides the speed, the way this bird can stop itself is a revelation. It does this apparently by offering the full surface of its tail, its body, and its wings simultaneously to air resistance; and if Mr. Millais is correct as to its speed and the power it has of stopping within a few feet, it is a wonder that it does not break its feather shafts as well as itself by the sudden pressure.

Of the 17 type birds it may be said that a true line of colour distinction cannot be drawn, and that their markings run one into the other as they are found East or West and North and South. It is well to regard these two tendencies as different geographic variations, and because the birds seem to have latitude variations in common whatever their longitude may be, and longitudinal variations in common whatever their latitude may be, to hold them all one species with local colour variations and nothing more. In the West the pheasant tends to redness, in the East to greenness, both of back and breast. The extremes are observed in the old English pheasant and the versicolor of Japan. This gradation of colour from East to West is not altered by latitude. But of whatever shade and longitude the birds may be, if they are found in the North they have a large quantity of white upon them, and if in the South they have no white. It is therefore possible to settle the natural home of the pheasant almost accurately by his coloration. The old English pheasant is a native of most of Europe in our time; but the Romans obtained it from Asia Minor, and it is named by ornithologists in consequence *Phasianus colchicus*. In England there are now not any of this breed; ours are all mongrels.

The Persian (*Ph. persicus*) is a near relation to *colchicus*, but has very nearly white wing coverts, narrower bars on the tail, and is dark-red on the sides of the belly. It inhabits West Persia and Transcaspia, and Mr. Rothschild thinks it a good variety for introduction, as it is hardy and flies fast and high.

A near relation is the Afghan pheasant (*Ph. principalis*), or Prince of Wales pheasant. It only differs from the last-named variety in its whiter wings, its maroon patch under the throat,

the wide purple bars on the flanks, and in the orange-red upper tail coverts. Mr. Rothschild gives it a good character for importation, and those who have shot it at home speak of it as almost aquatic in habit, and not only able but willing to swim.

The Zorasthan pheasant, or *Phasianus zerasthanicus*, only differs slightly in marking from the above-named variety—that is to say, it has plain brown scapulars, and much narrower borders to the breast feathers.

The Yarkand pheasant, or *Ph. shawi*, differs from *colchicus* in having a yellowish-brown rump and whitish wing coverts. Mr. Rothschild recommends its importation *viâ* India for our English coverts.

The Siberian pheasant, or *Ph. tariminsis*, very closely resembles the last-named variety, but differs in the greenish rump and the buff wing coverts.

The Oxus pheasant, or *Ph. chrysomelas*, comes from Amu-Darya. It is distinguished for its general sandy-brown colour and the very broad green bars on all feathers of the under side of the body.

The Mongolian pheasant has been introduced largely by reason of Mr. Rothschild's recommendation. It is known from all the others by the rich red of the flanks, the green gloss of the plumage, the very broad white neck ring and white wings. It is a very large bird. There is one point on which it is open to doubt whether this bird has not met more than its meed of praise. It is considerably heavier than the common pheasant, and is said to fly better. But the last statement is a little difficult to accept, for the bird is not like the Reeves pheasant, different in feathers, structure, and proportion of wing to weight. It is merely a very big common pheasant differently coloured and having everything in true proportion. It ought therefore, by reason of its weight, to fly worse than lighter birds. For big birds to fly as fast as small ones they require not only the same proportionate wing power and space, but greater.

Stone's pheasant, or *Ph. elegans*, is almost a green bird, like versicolor, except upon the flanks and shoulders. It is not well known.

The pheasant of Tibet, or *Ph. vlangalii*, is pale sandy on the upper parts, and has golden-buff flanks.

Perjvalsky's pheasant, or *Ph. strauchi*, differs from Stone's pheasant by its orange-red flanks instead of the dark-green and the dark-red scapulars with light buff centres. It is recommended for introduction without much hope of attainment. Its home is Gansu.

The West Chinese pheasant differs from the ring-necked Chinese bird by the absence of a ring of white; its scientific name is *Ph. decollatus*.

The ring-necked pheasant, or *Ph. torquatus*, was introduced from China to St. Helena about 1513 A.D. In England its first introduction is unrecorded, but it exists here no longer in a pure state. It is flourishing in New Zealand, and also in America. In some of the States, including Oregon, it has bred so largely as to be a positive nuisance to agriculture.

Two more pheasants, only slightly differing from the ring-necked bird of China, are *Ph. formosanus* and *Ph. satchennensis*.

The Japanese pheasant, or *Ph. versicolor*, is a beautiful bird with a dark-green breast. It was introduced by Lord Derby in 1840, and although the early crosses were no doubt large and beautiful, in the natural course of things, when colours came to blend, as they do not at first, a mongrel coloration would have been certain had not the crossing been so limited as to make no difference.

Of these 17 true type pheasants it is usual only to take account of the cocks. In the above not a word has been said of the equally important hens, that are practically all alike, which is additional proof that these are not species, and are only local varieties, breeding a little less true to colour than the varieties of fancy pigeons and fancy fowls.

The golden pheasant is not of the same genus as those above, but is closely allied to Lady Amherst's pheasant. The former does not do for a covert bird, because it kills the much bigger common pheasant. The silver pheasant belongs to another genus, and also is barred from the coverts in consequence of its greater superiority in fight than in flight.

WARTER PRIORY. LORD SAVILE SHOOTING

1906.	No. of Guns.	Name of Beat.	Partridges.	Pheasants.	Hares.	Rabbits.	Various.	Total.
Dec. 4	8	Blanch Whin	91	657	574	139	2	1,463
Dec. 5	9	Gold'n Vall'y	15	3,824	526	92	3	4,460
Dec. 6	9	High Cliff	11	3,037	182	42	2	3,274
			117	7,518	1,282	273	7	9,197

PHEASANTS AT WARTEE PRIORY. LORD LONDESBOROUGH AT HIGH CLIFF

PHEASANTS

IT is not certain whether pheasants are indigenous to this country. It is known that they were cultivated by the Romans as domesticated or semi-domesticated birds, and as remains of pheasants have been found in towns or camps of the Romans in Britain, it is assumed that those people introduced the birds into Britain. It will be observed that the idea rests upon the fact that the pheasants were not indigenous to Italy. But Italy is to Europe what India is to Asia, the most southerly country, and pheasants do not like low latitudes. The races of pheasant most allied to our own cross bred are found from Asia Minor right across the Continent to Japan, and it is quite possible that the Western race extended across Central Europe to England. Obviously a strip of ocean is no bar in Asia, and it is not likely to have been so in Europe, especially as it is said that once the ocean did not flow between Britain and the Continent. The first feast of English pheasants mentioned in history occurred in the time of King Harold. The old English pheasant, as we must call the bird which preceded by 1000 or 2000 or as many million years the introduction of the Chinese race into England, was a red bird upon the back and the upper tail coverts, and it had no white ring round its neck. The Chinese pheasant, on the other hand, had the band of white and greenish colouring on the back and upper tail coverts, and what we have done by mixing green and red together is precisely what an artist does with those two colours. He produces some shade of neutral tint. Consequently, our cock pheasants are only handsome from coloration in regard to the necks and heads and the breasts, which the crossing has not damaged. The

present desire to cross with birds that have white wing coverts, namely the Mongolian race, is liable to mix colours very much more. However beautiful a pure white may be and is, it has a very bad effect on the colours of fowls and ducks. White crossing has produced barndoor fowls of every hideous mixture, and the farm-pond duck with its washed-out feathering, which when compared with that of the Rouen and the wild duck suffers by the contrast. The Prince of Wales pheasant, the Mongolian, and even the Japanese versicolor pheasants, are handsome birds, and may be desirable as pure races, but any intermixtures of blood can only take place with the risk of spoiling the glory of the cock pheasant's plumage. The same remark may be applied to crosses with the Reeves pheasant, which are much more difficult to bring about, because the cross-bred birds only appear to come to maturity in their third year, so that there is little danger; for sportsmen want early maturity before all things in the pheasant pens and coverts, where an immature cock bird would spell disaster.

The system of penning pheasants as we employ it came to us from France; without its aid we never should have succeeded in making the enormous bags that are now the fashion. One thousand birds in the day are now more often killed than 50 were a hundred years ago, and there are some places where the host tries to quadruple the 1000, and nearly succeeds. But the author finds that the general opinion is that 1000 really tall, fast birds is enough for anybody, and that when more are killed, and especially when great numbers are desired, the birds are not usually driven in a fashion to afford those difficult marks that are above all desired by both bad and good marksmen.

The general way of starting to preserve pheasants is to buy eggs from game farmers. The usual price is from £5 to 10s. a hundred, according to the time of year. The early eggs are much the most valuable, and for them is the most demand. But eggs early in April run many risks that those of early May escape. That is to say, the eggs may be frosted in the pens, and the chicks may suffer from a combination of cold and wet, when either one or the other alone would not injure. At the same

time, it is always unwise to set up theory when nature is offering us free education. The survival of the fittest has evolved a bird that begins to lay generally about the 7th or 14th of April; that begins to incubate from about May 1st to the 7th, and to hatch out from about May 24th to 1st of June. Obviously this is because birds hatched much later than this have died out in natural surroundings, probably from being unable to stand our winters in their immature state of plumage. No doubt, also, eggs laid much before the earlier date have not produced chicks in sufficient numbers to alter the habits of the birds. Various kinds of forcing can be made to extend the breeding period at both ends, but there is a desire to increase the number of pheasants reared by their own mothers in the wild state, and there is every reason to believe that forcing of any sort would reduce the proportion of hen pheasants capable of raising a good brood in the open fields. They are not very successful, and the reason that has generally been accepted is that they are bad mothers, and go wandering aimlessly on as long as a single chick is left to follow. As a matter of fact this is not the reason. The young partridges and wild ducks in the rearing-fields leave the coops and hunt for food in broods, but the young pheasant hunts, or rather wanders, each for itself, careless of the presence of its fellows. This is how it happens that in the wild state the hen pheasant cannot shepherd her chicks. She cannot, like them, be everywhere at once. So the thunderstorm finds many young unprotected by the mother's wing; the hawks and the crows have no mother to beat off before they can dine on young pheasants, which they have only to find alone in order to kill with ease. But the worst enemy to young pheasants is long wet ground vegetation. They have to run about in it to get their natural food, and if it were not for the frequent recurrence of the mother's brooding wing they would perish of cold. In the rearing-fields the constant changes of young birds from one coop and foster-mother to another show how often death would overtake the lost birds were there not a house of call at every few yards. Obviously any cross bred that has the instinct to hunt for food in broods or collectively, and not in units, would

greatly assist in the spread and increase of wild reared birds. In the absence of any such sort, improvement only seems to be possible by means of natural selection, or the survival of the birds that do not get lost in the wet herbage, and in breeding from them in preference to those that have been reared by hand. But land varies so much, that large broods, say, at Euston in Suffolk, would not prove that the same birds could have reared a brood in the clays of Buckinghamshire or Middlesex. Sandy soil is much the best for game, not only because water does not stand on the soil, but because for some reason the vegetation dries up so quickly after a wetting. It is not the wet that falls on the chick's back that does the damage, but that which he brushes from the grass as he walks through it.

All questions of colour would have to give way before any difference of habits that would make rearing easier than it is. There is no reason why pheasants should cost more to rear than wild ducks and farmyard chickens, except that they are more delicate. Instead of being fed upon meal of kinds, they have to be supplied with hard-boiled egg, new-milk custard made with egg, or flesh, or blood, in their early stages. Bread-crumbs supply all the early necessities of the barndoor fowl, and the farther we go in pampering the farther we shall have to go. The farm poultry in wild nature lived greatly upon insects, just as the wild pheasant does now. It is to make up for the absence of insects that so much nitrogenous food is given to the pheasant chick, but as none is supplied to the domestic poultry it appears likely that pheasants kept as poultry are now reared would in a few generations become as hardy and easy, because those that could not stand it would die out. A race of pheasants entirely meal-fed would be of the greatest possible value.

Doubtless the losses at first would be heavy, for the pheasant in nature lives neither on corn nor seeds in its early life. When it is hatched in June, all the seeds of the previous year have grown into plants, and none of that year's plants will have ripe seeds for a month or more. So that when theorists tell game-keepers that they should give canary seed, and thus return to

a state of natural management, they are advising the most unnatural management possible; but, all the same, a very convenient one, if it could be done.

The present most accepted method of feeding hand-reared pheasants is to start them on finely grated hard-boiled egg or custard; in the second stage, to give the latter mixed with fine-ground dry meal, in order to stiffen the custard and render it capable of crumbling. From this stage the birds go on by degrees to receive more meal and less custard, until the time comes to feed them upon boiled oatmeal and boiled rice, as the state of their bowels require a slight alterative. The oatmeal is relaxing, and the rice just the reverse. From this point to crushed wheat is a long jump, because the latter is not boiled and the two former are. However, to make the consistency of the boiled food more breakable and less sticky, fine flour or oatmeal uncooked will for some time have been shaken into it as the cooked food is pressed through a fine-mesh metal sieve. The object of this is to prevent the food having a stick-jaw tendency, and thus remaining and drying upon the beaks, backs, and legs of the birds. The usual practice is to place the food upon a board for the chicks and to wash the board frequently. There is a possibility that a quick way of spreading disease, when once it exists on the rearing-field, is to throw about food on the ground. There it mixes with the excreta of the birds, and is a possible although unproved source of contamination. Dr. Klein proved that fowl enteritis was spread in that manner, and perhaps pheasants take their well-known disease in the same way; but this has never been investigated by a bacteriologist, and the constant assertions that pheasant enteric is the same disease as fowl enteritis is no more than a guess, and one that is very unlikely to be correct. If it were so, the foster-mothers would be sure to die when the pheasant chicks take the enteric disease and die off in large numbers: only one authentic case of the foster-mothers having died from fowl enteritis has been reported. Then the chicks remained healthy. Fowls nearly always remain healthy when 50 per cent. of the pheasants die off. The foster-mothers in the coops will require

water, and it should be boiled water given cold. It is not possible to leave water in the pans and prevent the young birds drinking it, so that every precaution has to be taken that the water does not introduce disease. But the chicks will not require much other liquid than that contained in their cooked food. A large proportion of the food given after the first fortnight should be green vegetable, given cooked or raw, according to the quality, or both, according to the appreciation of it by the birds. Green food and insects are natural pheasant foods in the summer, when the birds are young, and there is no reason why they should be deprived of one because they cannot get the other. Enormous numbers of insects are always in the trees of the coverts, and it was a habit of James Mayes, when keeper to the late Maharajah Duleep Singh, to remove his birds into covert the instant they began to look ill. He told the author that he saved them by this means, and as mature and immature insects drop in numbers from the trees probably the change back to natural feeding recovered the lost condition.

Of course pheasants will eat ants' eggs greedily; they would probably grow healthy and strong on this food alone, just as partridges will. But the insects do not exist in sufficient numbers to feed as many pheasants as are reared. Whether some few ants' eggs might be safely given to pheasants the author does not know, but partridges must either be wholly or not at all fed upon them. The birds will not look at anything else if they can get some ants' eggs, although the numbers are not enough to keep them. It is usual to try to do without this food, and only to employ it in case birds are off their feed and require a "pick-me-up." Young sparrows will feed upon the ants themselves, but small partridges only take the eggs. This causes much more of the food to be required, and although it is generally free food, the labour necessary to get enough makes the free food very much the most expensive.

The kind of pheasant pen required for the birds to winter in is a large one—the larger the better. The number of birds wintering in it must be left to the judgment of the individual.

It should be of grass, and so large that the birds' constant treadings do not destroy the growth. A level piece of ground without shelter is to be avoided. Dry banks, bushes, and basking and dusting mounds, as well as a heap of grit, are desirable.

Some people have had good results by leaving the birds in a pen of this sort to lay, and have found that a number of cocks amongst five times as many hens have not destroyed all chances of success by their fighting. But the usual plan is to make small pens large enough for each to contain five hens and a cock. Pens of 4 yards by 10, and 6 feet high, made of wire netting, are big enough, but they cannot be too large for the health of the birds, and as they last many years without removal, if the ground is dug up and limed at the end of each laying season, the expense of the first building is spread over fifteen or twenty years.

These pens are most cheaply made in close contact, for then two of the sides will serve a double purpose, for each will be a boundary for two pens. For 3 feet upwards from the ground the pens should either be turfed or made of corrugated iron, in order to afford shelter and prevent war with neighbours.

Another kind of laying pen most approved of late years, although success came before its invention, is that of the movable pen. These pens need not be more than a couple of feet high, but they have to be covered over, whereas if the birds have one wing brailed this is not necessary with the other kind of pen. Full-winged pheasants damage themselves seriously by flying against the wire netting roof of a pen, and even when roofs are made of string netting the shock birds receive on impact must be nearly as bad as those that kill netted grouse upon the same kind of netting. The object of these small light movable pens is to give the birds fresh ground every day. But the moving must be an enormous undertaking where many pheasants are kept, and it is conceivable that those who sell half a million eggs in the year, and want 5000 pens for the purpose, do not move them very often.

After birds have begun to lay in March and April, the next stage is to place the eggs under hens in sitting boxes. These are of two kinds: boxes in which the front opens out to a small wired-in network enclosure in which the foster-mother can feed when she is inclined; and the other sort, in which the only opening is from the top lid (which both kinds have), and from which the incubating broody has to be lifted by hand and then tethered to a peg while she feeds and waters. This is a tedious process when there may be from 500 to 1500 hens to treat every day. It is generally believed that the best kind of nest is one made upon the bare earth under these sitting boxes. That may very well be where there are no rats, but where this kind of vermin exists the author prefers a false bottom of turf to the boxes, with a real bottom of small mesh wire netting, which in no way interferes with the benefit eggs derive from moistened mother earth, but effectually prevents losses from rats, stoats, moles, and hedgehogs, although the latter would not be likely to make subterranean visits in any case.

The pheasant coop is another article of furniture the preserver cannot get on without. It is quite a light, simple, and handy contrivance, with a backwards slanting roof, three boarded sides, no bottom, and a sparred front, the centre bar being movable—that is, sliding upwards through the roof. These pens are set out in the rearing-field before the eggs hatch. That ensures the birds being brought from the nests to dry ground. For a few days the chicks have to be protected from themselves, and prevented from running away from their foster-parents. This is best done by the use of two boards about 6 inches high, which are placed so as to form a triangle with the opening of the coop as its base. Then the coop must be very well ventilated, for it has to have a shutter, one that is always closed at night, and the young birds are best not allowed to wander about in wet grass before the dew is off in the morning, so that they sometimes have to be fed, and then again shut up until the morning sun has done its work, but this is only when they are very young.

The field chosen for laying pens, as a matter of human

choice, differs greatly from the ground the pheasant prefers. The latter is bog ground for feeding in, and also very frequently the dry grass patches or tussocks in the bog for laying upon, and only the coverts for roosting. Human judgment not being able to supply all these in one small confined place, compromises by supplying neither, and giving a dry, sloping, sunny, sheltered, but treeless bare ground patch of earth, often turf in the beginning, but bare earth before the termination of the laying season.

There are many other methods of providing for the wants of pheasants, some of which cannot be recommended. There is no space to mention all, and therefore the writer is obliged to confine his remarks to those he believes to be the best, and those he has known to succeed up to expectations. But a few remarks are perhaps necessary about some of them. For instance, the plan of having laying pens moved annually is good if suitable space can be spared. Wattle hurdles have been used to make these cheap movable pens of all sizes. But they are objectionable for small pens, as likely to keep the sun off the ground without keeping the draught out. Indeed, they are very draughty affairs, and pheasants hate wind, and do not succeed without sun. In order to successfully use wattle hurdles of 6 feet square, the ground should be large enough to fully benefit by the morning sun's ray when at an angle of less than 30 degrees. Then, in order to keep out the draught, it is useful to convert the bottom 2 feet of the hurdles into wattle and daub. This has the misfortune of making them rather heavy to move about.

For years the annual digging up process was carried on with success at Sandringham.

In order to prevent insects from infesting the sitting hens, it is good to have dusting sheds, and occasionally to remove the hens to these. Slacked lime and earth kept dry under cover is the best material for this purpose, but if it is necessary the same results can be attained by the use of plenty of insect powder in the nests.

Pheasants in laying pens rarely get enough green stuff. It

is for this that daily movable pens are the best, because they allow the pheasants to get grass shoots, which, however, are not the most suitable kind of green food. Onions, lettuce, cabbage, turnip tops, turnips themselves, and apples are all useful; but if the grass is full of clover none of these will be necessary. Naturally everything depends upon the quality of the grass and whether the birds eat it or not. Boiled nettles are useful, but vegetable is best given to old birds uncooked, except when potatoes are used. They have been known to eat the fresh uncurled sprouts of the bracken, but the pheasant farmer who relied on this kind of food would not be likely to make his fortune. Fresh smashed-up bone seems to be necessary for the well-being of laying birds, and of course grit—that is, small gravel, and if this has its origin in the seashore it will probably contain enough shell of sea-fish to make a supply of bone unnecessary.

The choice of food for penned pheasants will depend largely upon prejudice and circumstance. Of necessity grain of some kind will be the stand-by. If it is desired to keep the same hen pheasants for laying for several years, but little Indian corn will be employed in the best regulated establishments. It does not matter that this food, like acorns, spoils the flavour of the flesh, but it does matter that the birds become too fat inside for health. Probably the first season they do not show a loss of egg productiveness, but later they do. Maize in the coverts, to keep the birds at home when they scramble for food in every field, is less objectionable than for birds that do not get much exercise and live in want of it. Barley, oats, beans, peas, and wheat are all useful in turn; and besides, as the breeding season comes on, a warm breakfast of cooked oat or barley meal is useful. Greaves are remnants from the soap boilers', and are not very reliable foods; but if *fresh* meat can be obtained, a little of it stewed to rags in the water in which the food is afterwards cooked is distinctly useful in egg-producing time, but is not necessary then, and certainly is not so at any other period after the birds are half grown. At the same time, to make up for the absence of slugs to the penned pheasant, the author would always

give a little if it could be cheaply obtained. Very little in the way of animal food comes amiss to the wild pheasant, which has been known to eat mice, wire worms by the thousand, slugs of all sorts, snails with shells and snails without, frogs, blind worms, and young vipers.

The greatest misfortune about penned pheasants is that they take no exercise. As gallinaceous birds they ought to scratch for a living, and that is difficult to arrange in movable pens on turf. It is quite possible that they would be more healthy upon ploughed fields, especially if a part of their daily grain was raked in before they were removed to the fresh ground, but in that case they would lose the plucking of grass and clover.

Pens with open tops and birds with one wing clipped have been recommended in order that the wild cocks should visit the penned hens, but whether it has ever succeeded or is merely a pretty theory the author is not aware: he does know that it has often failed, and infertile eggs have been the consequence.

It is questionable whether the cocks go to the hens as much as is believed. In the author's experience of pheasants, it has been the hens that have been attracted by the crowing of the cocks. He has known newly established laying pens to draw hen pheasants in numbers to ground that they never before nested upon. Whether they would have entered the pens if they had been open at the top is doubtful, but many of them laid outside and had infertile eggs. After all, what is the crow given to the cock for if he cannot make any use of it?

There is some difference of opinion as to whether most success follows the incubation of pen produced or of wood produced eggs.

This is only to be answered with reservations. There is no doubt that 90 per cent. of fairly early eggs from well kept penned birds will be fertile. There are two reasons against as large a proportion from home covert birds. First, the latter are picked up less often, and run more risk from night frosts. Second, you may leave a large proportion of cocks and yet lose most of them by their straying off for miles with favourite hens.

Mr. Tegetmeier, in his book on Pheasants, has collected evidence from all quarters, and he gives many good reasons for not reducing the cocks below a proportion of one to three hens. Mr. Millard has lately expressed very strong views against leaving fewer than eight hens to one wild cock. But perhaps Mr. Millard's life, in connection with game-meal, is not precisely that which would endow him with the most reliable information from all directions. Be this as it may, it is within the experience of the author that when one cock to five hens has been his accomplished aim, he has had the satisfaction of seeing straying pheasants in every part of an estate all breeding good broods, but the disappointment of knowing that every cock had left the home covert and that many hens were laying infertile eggs there. Probably there are limits to the distance a hen bird will go to the crow of a cock. Here was a case in which not one egg per cent. was good in the covert, but out in the fields a mile or two away it was quite different. Every egg was fertile and produced its chick.

The coverts are not really natural places for pheasants to lay in, any more than they are for partridges. Generally, when pheasants begin to lay the fields have too little covert to tempt them to make nests in the open. Then they resort to the hedgerows, and when these are scarce, as they are in the stone wall districts, many more birds lay in the coverts than would do so if there was vegetation outside. However, in a stone wall and partridge country, the author has seen as many pheasants' as partridges' nests mown out of the Italian rye grass and clover-fields. But these were late birds, because this mowing rarely begins before June 15th, and many pheasants have hatched out before then. If it could be planned that all the pheasants left could be prevented from straying, then fewer cocks would possibly do, and this might occur in a grass country. But in a corn district the birds will stray, and when half the cocks have departed, as they will with one or two hens to each, those left would not have the proportion of hens aimed at; but where three hens were attempted to be left to each cock, and two of them went away with each of half the males, the

other males left behind would have four hens each; where five hens were designed, the real proportion in the cover would be eight hens to a cock; and where the design was to leave eight hens, the real proportion would be fourteen hens to a cock after the strayers had left in similar proportions.

It may be replied that keepers should prevent straying, but, on the contrary, it is just what is wanted, and it has come to be the best and most fashionable preservation to encourage it.

Those who know best act in the belief that every cock pheasant that gets away with one or two hens will become the sire of one or two good broods, and they know, too, that those that remain with many more in coverts have not the breeding instinct fully developed, and that if they have chicks the competition for natural food will be too great for the welfare of any. In other words, the old birds will eat up the insect life before the chicks come.

Pheasant preservers have in their minds the preservation at Lord Leicester's, at Holkham, in Norfolk; that also at Euston, the Duke of Grafton's, in Suffolk; that at Beaulieu, in Hampshire, and have become aware that with proper encouragement on suitable land the wild reared pheasant is enough of itself, and on any land a great assistance to the game stock.

The most noted success has occurred at Euston, where about 6000 wild pheasants have been shot in a season. This is the most noted, because the system adopted there advanced game preserving in general by one step.

The advance occurred in this way. When the Duke of Grafton succeeded to the property, he told Blacker the keeper to stop the hand rearing of pheasants. The keeper, however, begged for, and obtained, a compromise. This was, that he might have hens under which to place eggs removed from pheasants' nests in danger, until he could find other pheasants' nests in which to place them. It has resulted, in practice, in keeping eggs until the shell-chipping stage under the domestic hens, and then in placing them under pheasants having their own eggs in the same state of incubation. This

has succeeded in producing big hatchings of pheasants, many more than the birds would lay eggs in the ordinary course. But the Duke of Grafton has denied that bad or dummy eggs have been used at Euston, and consequently, although Blacker pointed the way, he did not consummate the latest phase of pheasant preservation, in which all the birds' eggs are removed as laid, and are incubated under hens, while the female pheasant is kept sitting on "clear" eggs, in order to be ready to take a big batch of chipped eggs as soon as they are ready.

The object of this plan is that if the bird is killed, or is made to give up sitting by bad weather, the eggs are nevertheless not injured, but are merely passed on to be divided amongst other birds.

It has been said that there is no advantage in this plan, but one cannot help thinking that only lazy keepers and their friends who sell game foods would say so.

The argument is that the nests are not in danger from foxes until just at the time of hatching. It is said that the birds lose their scent when incubating, and that only when the chicks break the shell is there any scent from the nests. As a matter of fact there is very little scent from breeding birds whether they are sitting or laying, but to say there is none, and that foxes cannot find them, is a total mistake.

Nests are taken by dogs and foxes, and by hedgehogs and rats, at all times of the incubating period. If the birds gave out as much scent as they do at other periods, there would be *no* nests left in a fox country. But nature and the birds, between them, do defeat the foxes and the vermin in a fair proportion of cases. It has been affirmed that incubating alters their system, and that the scent that before passed out through the skin passes out with the excreta when the birds incubate. That is to say, that there is a total change of system brought about by the change of instinct. The stronger scent from the excreta of sitting birds has been advanced as a proof of this. The author will not discuss this theory or deny it, but he is certain that the whole loss of scent can be accounted for in

another way. There is perhaps a change of scent in breeding creatures. To explain this, in a doubtful way, it has been affirmed that in gestation the superfluous essence of a beast finds a use in being drained by the blood to the embryo.

In birds, however, if they are discovered off the nest, your pointer will frequently point them, but will not be able to do so when they are upon their eggs. The pointer is not a close hunter like the fox, the terrier, or the sheep-dog, all of which occasionally find too many sitting birds. But that which most negatives the change of system theory in birds are two facts. One, that off the nests to feed the birds have scent; and the other is, that at any time of the year the birds have power to withhold their scent by merely crouching tight to mother earth, holding in their feathers and remaining motionless. The author has been one of a party when the best dogs then in existence totally failed to find a wounded grouse. Then it was resolved to lunch, and dogs were dropped or coupled up where they were. Towards the end of lunch, one of the dogs was observed to be pointing downwards with its nose not 6 inches from the ground upon which lay the wounded grouse. That is to say, it had remained immovable and *scentless* within a yard of these crack dogs for more than half an hour. These dogs were the very best amongst the most successful field trial winners of the time, and to doubt that they had remarkable noses would seem absurd if their names were mentioned. Some of them had won by finding game 100 yards over the backs of their competitors. But there was absolutely *no* scent from that bird until it became exhausted. Nor is this unusual. A falcon generally, and an artificial kite sometimes, will make unwounded birds crouch like this, and they too will often give out no scent whatever. At other times dogs will be only able to detect the foot scents made before the birds were scared into close lying. If there could be any doubt about the noses of the dogs the author has shot over, he would not dare to write like this; but the best dog men of the present time will, he knows, support him when he says there never have been better nosed ones.

Consequently, it is affirmed that birds can not only reduce their scent at will, but *wholly suppress* it, for a time at any rate. They can only do this when motionless, and this seems a sufficient explanation of why all birds are not found on the nests by foxes and vermin. The greater difficulty seems to be to discover why so many are found; but as even Jove sometimes nods, it may be that the partridge and the pheasant does so too, and the slightest movement appears to be fatal when scent means death. One thing it is difficult to explain: How is it that the breath does not betray the presence of the game? The otter can be hunted down the river by the bubbles of breath that rise from him. The submerged moorhen and wounded duck can be unerringly found by the dog in the same way and by the same means. Is it possible that birds can subsist without breathing for periods that would be fatal to ourselves? The author expresses no opinion, but there is a total absence of scent upon occasion to account for; this entire absence is rare either during incubation or at other times.

Those who think there is no advantage to be derived from removing the eggs into safety during incubation, say that there is no danger because there is no scent. Yet one of them at least, namely Mr. Millard, advises the use of Renardine to prevent the danger which scent causes.

Mr. Alington, the author of *Partridge Driving*, describes how Renardine, the preparation in which Mr. Millard is interested, was effective in keeping off foxes from the partridges' nests one year, but was actually the attraction to them the next. Mr. Holland Hibbert had a similar experience. Mr. J. Geddies, of Collin, Dumfries, wrote to one of the papers recounting similar misfortunes. There have been plenty of letters written by keepers giving contrary views, but probably the papers have exercised a wise discretion in not publishing them. It would be unusual if the makers could not get testimonials from a number of their clients, and they certainly would not ask those to state their opinions who were dissatisfied.

We have to remember that Messrs. Gilbertson & Pages'

representative would not be commercial if he were impartial, and that the spread of what is called the Euston system would obviate the necessity at once for Renardine and for the more important and more useful game foods sold by the firm named above.

Another objection to protecting nests by evil-smelling substances or liquids is, that men can smell them too, and if it took a fox a year to know that a peculiar sensation to his olfactory nerves meant partridge, it would not take a reasoning being a day to do so. Indeed, with this guide to nests, the stealing of eggs could be conducted by night as well as it is now by day. Another so-called prevention of foxes consists in small pieces of metal covered with luminous paint, but this again is open to precisely the same human objection as the other.

Scent is very little understood, but there is no reason why a non-smelling volatile substance should not be discovered some day that will combine with the volatile essence of game and neutralise it, just as the scent of ozone is neutralised in the presence of carbonic acid gas. Ozone is only oxygen in a peculiar molecular form. When one atom amalgamates with the carbonic acid, the others become simple oxygen again, and as part of the air have no scent. An essence that will act in some such way towards the scent of sitting birds appears to be desirable in the interests of game and foxes. But even if it were discovered, it would do nothing to save the nests in heavy rain, when every depression in the ground is flooded, and when partridges, grouse, and pheasants are forced to abandon incubation.

It is difficult to suggest when precisely it was discovered that partridges would permit themselves to be interfered with upon the nest.

The credit has been given to Marlow, Lord Ashburton's keeper at The Grange. The author has no reason to dispute the credit, which is probably properly bestowed. At any rate, Marlow made Hampshire famous for partridges, and for years held the record for a day's as also for a three days' bag, and

but for hand rearing at Houghton he would have held it for four days also, and *entirely without hand rearing*. This is not the place to discuss partridges, except for the fact that the use of dummy and clear eggs for those birds has been erroneously attributed to Euston. Really it was an advance, and a very great advance, on the Euston plan. But pheasants have been handled on the nests by careful and clever keepers for many years, although it appears to be only recently that it has come to be known that partridges could also be treated familiarly, if proper precautions were taken. The principal of these is not to attempt to touch the nest with the bird upon it until she has been sitting close for three days at least, and then to make no sudden movement when approaching or handling the nest. If these points are attended to, the bird will not leave her nest far, if she leaves it at all, and will soon come back upon the retreat of her supposed enemy.

But whether this system of egg preservation is partially practised or the eggs are wholly left to chance, they should all be marked, either with indelible or invisible ink. The former plan is of the most use in preventing egg-stealing, and the latter is the most useful in bringing home the theft, and perhaps in ridding a neighbourhood of an undesirable. The invisible ink shows up as soon as eggs marked with it are inserted in an appropriate solution.

BRINGING PHEASANTS TO THE GUNS

THERE are some places in which it would be almost impossible to have pheasants and not have sport. The desire is to shoot pheasants that are difficult up to a certain degree, but no farther. For instance, in a flat country one cannot make the birds fly too high to please sportsmen, and in a hill country it is difficult to prevent them from flying too high. The way pheasants are driven to the guns at Holkham seems to please all shooters, and Lord Leicester's management has always been held up as a model of woodcraft. The park at Holkham is very large, is surrounded by a wall, and contains within its area an arable farm. Around the park inside the wall run coverts, and the first plan of action is to drive the pheasants forward to small elevated woods, and then to place the guns between the birds and their homes. In some places the guns are posted three deep. It is the height of these rising places that makes the shooting there so good. But very much time is saved by the plan adopted by Lord Leicester of not shooting at pheasants until they have been driven into the right spot. This not only saves the time too frequently occupied elsewhere by stopping to look for game as the line should be advancing, but also obviates the necessity of all the ground being hunted over for wounded pheasants the day after the shoot. It is a very clean performance in every way, and anyone who wants to lay out pheasant coverts cannot do better than make a visit of inspection to Holkham, by Lord Leicester's leave. But the laying out of pheasant coverts is like planting a tree. It is true that a tree grows while its planter sleeps, and is therefore economic; but it is also true that an oak grows when its planter sleeps the long

sleep, and therefore it is an investment for posterity. So also is a pheasant covert in a less degree.

The real test of woodcraft arises when coverts are flat and there are no tall trees. Then it is still possible to make pheasants fly high enough for anyone, provided a few favourable conditions exist. Before referring to these, it may be well to say a word on the character of the pheasant; for it is only by knowing this that a shooter can make sure of getting the birds to behave as they are required to in unexpected or unfavourable conditions. The pheasant, then, is the most timid of game birds; whether he has been hand reared or is of wild bred origin, this character clings to him. He is, besides, as superstitious as a young lady alone in a haunted house. He is frightened at any material object, but he is much more afraid of the unseen and suspected enemy. In the pheasant pens some cocks get very familiar with their feeders, and will even spar at and wound them with their spurs; possibly they think that this treatment is the influence that brings the food. The same bird that attacks a strong bearded giant of forty within the bars would go frantic with fear if an unknown child of three summers toddled up to the outside of the bars of the pen. In the coverts the bird is still the same creature of impulse. If you make a noise, he will run before you, for he understands perfectly well what is making the noise; but if you move forward silently, and come upon the pheasant unawares, he will not run, but will either crouch and sit tight, or fly, and very likely go back over the head of his disturber. Indeed, it is generally as easy to guide a lot of pheasants as a motor car, and much more so when the latter skids. Pheasants do not skid; they do nothing for nothing, and everything is done for a very good reason. Theirs are not chance movements at any time. Knowing that a pheasant is superstitious, it is exceedingly easy to prevent him from going on foot where he is not wanted, but he is only superstitious as long as he is on foot. Noises made by hidden "stops" will have no effect whatever upon him the moment he gets upon the wing. Then he must see in order to fear.

These traits may all be made use of in causing birds to fly high where, without artifice, they would not rise 10 yards.

For instance, assume that it is wished to beat a covert which has pheasants and possesses only a few trees for roosting, and none that will make a bird mount to get over them. That does not matter. Out of just such a covert the author has seen the most pretty pheasant shooting. The way of it was this. All the birds were run out into an adjoining broom-field, from which in the ordinary way the pheasants could have been driven back to cover with the beaters re-starting at the other side of them, and at the end of the field farthest from the covert, without any of the shooting being more than moderate in difficulty. In the ordinary way of beating, stops would have prevented the pheasants running out at the far end of the broom-field, and when the beaters went round to join these stops, leaving the guns under the wood and on the field side of it, the trouble would begin, because in this case the pheasants would never fly very high. But a totally different complexion can be given to this shooting by a very slight alteration of the plan of campaign. In the first place, instead of half a dozen boys being sent round to stop the pheasants from running clean through the broom-field, a few of the most trustworthy men are sent on this business, with instructions to tap sticks occasionally, but to speak not at all, and above all never to show. The object is to prevent the birds finding out what is making the tapping noise, and if they see boys they will know directly what is the cause. By this means the other side of the field of broom farthest away from the covert is converted into a mysterious land, one into which no self-respecting pheasant will enter on any account. Having run out the pheasants into the broom, and placed the guns between the field and the wood, instead of driving the pheasants back towards the wood, the beaters will be most successful in making pheasants fly high if they attempt to drive them on, past the mystery men at the farther end of the field. *Nothing* will make the birds go: they will all come back to their own covert; but instead of rising wild and flying low, they are now as it were between the devil and the deep sea. As

they dare not face the spirit world, or the unknown quantity, the more they are frightened by the advancing beaters the better for their flying. It is one of the few cases where noise is better than silence in driving game. The more the noise the closer the birds will lie, and the closer they lie the higher they will rise, in order to get back over the heads of their mortal enemies, whom they hold dangerous in exact degree to their proximity. Then, when the pheasants have gone straight up and turned back over the noisy beaters, they see the guns between them and home, which has the effect of keeping them from sinking as they go homeward, and often makes them rise higher still.

If, besides making use of this plan, including driving the birds away from home on their feet and back to headquarters on the wing (which is the recognised principle), the last operation can be performed down wind and in a breeze, the success of the scheme will be enhanced, but it does not depend for success upon those conditions.

Every shooter professes to despise pheasant shooting unless the birds are converted into good "rocketers." But there is a little doubt what this term conveys to different sportsmen. The author has seen sportsmen professing the faith of the rocketer, already mentioned, supremely happy when standing 50 yards outside a covert and slaying the birds that rise in the corner no farther away. Possibly the term might originally have been used to imply a bird that had risen straight up, but the author does not remember its use in that sense. For thirty years it has meant to sporting ears a bird which has risen high a long way in front, and comes with the impetus gathered in long flight over the head of a shooter. If at that moment the bird is sinking slightly on outstretched motionless wings, it is none the less a rocketer. The late Bromley Devonport's chaff about the sportsman who preferred to seek the rocketer in its lair has doubtless lost its meaning, but all the same those who surround the corner of a covert in order to shoot just risen or just rising pheasants are truly cornering the pheasant, but not the rocketer.

How far a pheasant should come in order to get its best impetus is rather a difficult question. Clearly it must not be so far as to make the bird begin to look out for a place to alight. That is to say, it must be under 600 yards in most cases; but that does not assist very much. Probably the best distance from the rise always alters with circumstances, but there seems to be no reason for extending it beyond the midway distance between the first two "sailing" periods.

The pheasants, in common with grouse and partridges, seem to object to meeting more than a certain air resistance. When they have got up to a speed at which the air resistance becomes unpleasant, they hold their wings out still, and sail or float for some distance before renewing their wing vibrations. If they are shot before this floating occurs for the first time, they have not come to their full speed. If after, they probably have come to it. If game is making up hill, the floating occurs much later for the first time than it does when the direction is horizontal or down hill. It is possible then that, speaking strictly, a pheasant does not become a rocketer until it has passed the first floating stage of its flight. It may be that when going up wind it will not be able to float at all, but if the wind is as high as this implies, there is, again, the question whether the pheasant is entitled to be called a rocketer. The term, however, has been so much abused by misapplication that it has almost gone out of use, and people speak more frequently of high or tall birds and of fast ones, of curling and sailing pheasants.

Although pace is in great request by the pheasant shooter, he does not generally appreciate the greater difficulty of shooting through foliage at his birds. There is excuse for this. The shot does not do the trees any good, and besides there is a distinct tendency to shoot to a "gallery," which in cover is limited by the surroundings. It unquestionably enhances the pleasure of covert shooting to be able to see what all one's fellow-guns do. There are times when no birds come except in one way, and this is apt to be dull for those not then "engaged," unless they can see the wings of the battle line. Nevertheless, speaking of our best English sporting spirit, if we

can satisfy our own critical sense, we desire no other appreciation. But we like to appreciate others and to criticise mentally their performances, therefore we want to see them. The author, however, has pleased himself more by success in killing pheasants between tall trees that he could not see through than by any other kind of shooting. However, he would not say that this is really the more difficult in practice, although in theory it looks to be infinitely the more taxing. The author has missed more easy game than any others, he supposes by mere laziness. If there is anything special to be done, one is never late for breakfast; but on a day off one often is late, and it seems to be the same in shooting. If there is only just time, then the nerves are alive to take the smallest chance, whereas, given ample time, the author at any rate can often take just too long.

In bringing pheasants to the guns, it is often necessary to discriminate between the wild and tame bred. The former are much more upon the alert than the latter, and it is often impossible to drive them out of a cover, for the very simple reason that they cannot be got to go into and remain in it long enough to be driven out. Then pheasant driving becomes beating a country, very much like grouse or partridge driving. Wild birds are also much more apt to take wing before they are wanted to, and to fly out at the flanks of the beats over the heads of the stops. But provided the wild birds can be kept upon their legs, they will answer to the control of the woodcraftsman just as well as tame bred pheasants. Probably there is no difference in the speed at which tame and wild pheasants travel, and one is as easy to shoot as the other when brought to the gun, but the wild bred bird is not as easy to bring there as the other. If he cannot fly faster—and the author agrees with the Marquis of Granby that he does not—he can at least fly farther, and probably he is more likely in hill country, where he is mostly in evidence, to take an up-hill course. Both of these characteristics are apt to carry him well out of range of guns that are posted as experience of hand-bred pheasants suggests to be best.

Pheasants will rarely fly away to ground they do not know, but they can be made to run there. The principle of driving them is to leave one end open and close three sides by means of beaters or stops. But the birds have a natural tendency to cling to cover as they run, not necessarily woods, but any cover that can hide them; turnips and gorse, broom and ferns, they particularly like to run in. But in driving pheasants along narrow strips of covert side stops have to be well back from the plantation, otherwise by becoming aware of stops far ahead the birds may believe themselves to be pounded, and then they will fly at once, and usually towards their homes—that is, in the opposite direction to that in which they are wanted to go. At Holkham, for the reason stated, a good deal of this shooting of "pheasants back" is prohibited; but in many places it is the most appreciated of all, for those that fly back over the heads of the advancing line in covert are sure to be high 100 yards behind the rise, whereas in the line they may give rather tame shooting.

The latest generation of pheasant shooters looks back at the sport of a hundred years ago with indifference and contempt—indifference because the birds were so few, and contempt because it believes the shooting was very easy. Some of it was very easy, no doubt; but in those days there were no rides through the woods, and some of them were so thick that leather jackets had to be worn by sportsmen, who would force through after spaniels, or try to, and often find that even then they could not do it. The gamekeeper's change of dress from velveteen to Harris or home-spun cloth indicates the change that has taken place in the coverts. Forestry has more or less come in, and with the more thickly planted trees, blackthorn and bramble, white thorn and gorse, have been stifled by want of sun and air. The pheasant now runs in the open covert, whereas he would lie close in the bramble and gorse bushes, which often grew 8 or 9 feet high. Pheasant shooting in the "hind legs" was not child's play; it was dreadfully hard work, and the snap shots given were often most difficult, but the difficulty was not of the same kind as that of the fast, high bird in the open, which is mostly one to overcome by cool judgment and

calculating trick, but it was one requiring physical strength and snap shooting.

Often it has been said that our ancestors knew nothing of the rocketer. But the hardest pheasants the author has ever had to kill have been Welsh pheasants flushed by a team of wild spaniels, and these birds often came a couple of hundred yards before they got within range, *and all down hill.* That is to say, there still exists shooting done in the same way in which it was managed before the battle of Waterloo, and that shooting is infinitely more difficult than any that can be obtained in a flat country.

The author has arrived at a time of life when he has no particular ambition to enter into competition with his dead ancestors, but he believes that their skill in shooting the few birds they had was quite as great as that of their descendants. They were flight shooters, and if they could hit flighting ducks and teal in the dusk of evening, they could do anything with the shot gun, except that they knew nothing of getting off their guns at the rate of 200 shots in 20 minutes.

This is quite a demoralising rate of shooting at first, but it is attainable by everyone, now that every gun-maker has a high tower and clay birds to put over the shooter in streams.

Fashion in shooting always seems to go by contraries. That which is most difficult becomes most fashionable, and now that anyone may learn how to hit driven game and "let off" quickly, by means of the shooting schools, it is doubtful whether fashion will not turn round and favour that which is less attainable, and not to be acquired by school teaching. This sort of shooting education cannot help a man to shoot straight at the end of a long day in hot sun and over the roughest peat hags. Only practice in the thing itself will do that: there is no royal road to high form, as there is for the butts.

In big shoots the tendency is to have two parties of beaters, to avoid a loss of time. One party gets into position while the other is beating, so that often guns have only to face about after shooting the game of one covert in order to receive pheasants driven into the beaten covert from another one.

A semicircle of beaters is advocated sometimes, but the wings are feeble protection against pheasants breaking away, and it is much better to employ stops, when there will not be the same necessity for the crescent formation.

Beaters should be supplied with smocks. It is not fair to them to send them through thick covert without some protection to their clothes, more especially if the covert is wet.

Pheasant coverts are not now often full of ground game, and the beating for both together is not as fashionable as formerly was the case. There are usually difficulties; for instance, the rabbits cannot be got to leave coverts, and the pheasants are not much shot inside them. But where the guns are used to drive the pheasants to favoured rising places, and no attempt is made to shoot the birds before they get there, rabbits and hares can very well be shot in these beating operations. The only difficulty in this is the delay that occurs in looking for the dead and wounded, and really there should be no difficulty about that, if all shooters made it a point of sportsmanship to have a good and reliable retriever. But if canine steadiness is always useful, it is essential on these occasions. Pheasants are running in front, perhaps in hundreds, and a retriever sent for a wounded rabbit must be perfectly safe not to get on the foot scent of one of the pheasants and rode it up, until overtaking it he flushes hundreds and spoils the day. There are some retrievers that it would be quite safe to send for a rabbit, because it never goes far, and also for a hare, or pheasant, back, but for neither of these forward, because there is no knowing that they will not run into the bulk of the pheasants, and when once put on wounded game it is the retriever's business to follow until he gets it.

In very big coverts the stopping out of rabbits may safely proceed before the pheasants are shot, if care be taken that the stopping is in progress only in one part of the wood at any one time.

Sometimes it is necessary, in order to make pheasants rise far enough from the guns, to run nets across a wood 100 yards or 200 yards from its end where the guns are to be posted. Some people use a "sewin" instead. This is a long string with

a bit of paper or feathers tied into it at every 5 yards or less. The whole is then lodged upon sticks stuck into the ground. If one end is given to a man, he can by jerking the string turn back large numbers of pheasants; but care is necessary to ensure that the sticks are flexible, and that the string is firmly fixed to the tops of them. The object is that the feathers or paper may dance when one end of the string is pulled.

A succession of small rises throughout the length of a covert can be arranged, by fixing at intervals short nets set up in the form of a V, with the opening towards the beaters.

SHOOTING WILD DUCKS ARTIFICIALLY REARED

DURING the last decade it has been discovered that wild ducks can be so managed as to give assured sport. Some people rate it a good deal higher than pheasant shooting and besides this the wild duck is very much more easily bred than the pheasant, costs less than half, and if it does give as good sport, or better, there is nothing more to be said. But the artificially bred wild duck is very much more difficult to manage in shooting than the pheasant. The latter is a shy, nervous bird; but the duck considers things, and therein lies the trouble. If you treat him affectionately, you cannot frighten him; if you keep him wild, you are very likely to lose him altogether. You may so arrange, if you will, that the wild duck is not the least bit scared at the firing of guns. Probably this is the proper management, because, after all, when this has been brought about, your duck only the closer imitates the game birds that we love so well. You will send every pigeon clattering out of the trees if you fire a gun in covert; but the pheasants take hardly any notice, neither do partridges or grouse care for the sound of a gun, although they care very much for the sight of a man, and shy at the smoke but not at the sound made by a line of guns. The wild duck, unless taught better manners, is as scared as the pigeon by the sound of firing. Hence it is difficult to drive birds backwards and forwards over a line of guns, because even if they will take that flight twice, they will mount up five or ten times as high as a gun can reach. The more shooting there is the higher they mount, and even if they want to come down to a favourite

pool they swing round and far above many times before they venture to come near enough to the surface to afford a shot. This is the nature of the really wild bird, which is nevertheless partial to one home water, and is practically at home nowhere else. Consequently, when duck are artificially reared, this wild and pigeon-like habit must be eliminated in some way, otherwise a thousand duck may show themselves only too well, and give no sport whatever. The broad principle of getting shooting at hand-reared ducks is, therefore, either to prevent guns from scaring them, or else to arrange that instead of seeing the shooters constantly they only see them once, and that once when the birds are going home. The first plan is very easily arranged by constantly letting the ducks hear a shot or two about feeding-time. It can even be brought about that the gun is the signal for food, and when that has been accomplished the danger is not that the birds will be scared away to sea or into the sky, but that they should settle near the shooters and quack for food. But without making the gun the actual signal for feeding-time, it is easy enough to let the young birds hear enough of it to disregard it entirely. If this is not done, the birds will not settle during shooting in the neighbourhood, and if they will not alight they cannot be driven. Another difficulty is that these birds love to associate in great numbers, and in a big flock what one does they all do. It is clearly too mad for a moment and dull for an hour when all the duck come over at once, and so end a morning's shooting.

Two plans have been adopted for getting over the difficulty, both of which are based on calling the birds to feed away from home, and driving them back over the shooters in small batches.

This is open to sentimental objections, of course, but there are two ways of doing even this: one of them seems to bear lesser sentimental objection than the other. The most effective plan is that one which it is said was adopted at Netherby when and before the Prince of Wales shot there. The statement has often been made, and has never been contradicted

in public, so probably it is true, that when the birds are called to feed away from their home waters by the sound of a horn, they are penned up, and then let out a few at a time to fly home over the heads of the guns. The Prince has expressed the intention of never shooting at trapped creatures, and probably he is unaware how the Netherby duck were managed, because if it is done in the way described above there is a sort of penning, but so managed as to give the duck all the world before them if they elect to take chances before they come to the guns. There is absolutely nothing to show that the duck have been detained longer than just enough to divide them into small batches, but what the Prince of Wales has said does nevertheless express the sentiment of sportsmen generally. The best deer shooting in the world is of no sporting account if it is in a park and not on open ground, and consequently there is a sentiment which counts for a good deal in the manner of driving duck to the gun.

The other plan to effect the same results without awakening any question of the ethics of sport, is to be found in feeding the duck, not in pens, but in a wide expanse of covert, and teaching them to hunt all over it for their broadcast scattered grain. If this plan is adopted, it is fairly easy with clever management to send the duck home in small batches, provided the feeding-ground is widely enough scattered, so that one party of ducks cannot see another when it is flushed or when in the air making for home. Duck imitate each other to such an extent that if they did see one lot disturbed and made to fly home, probably a great many would rise at once and do the same. Obviously the better way to avoid this is to start the duck out of covert at the end nearest home first—"home" being here, as above, used in the sense of the duck's resting-place, which is generally, but not invariably, water. At Netherby it is said that ducks are made to consider the coverts their homes in some cases. It cannot be laid down to apply generally that any one system is the best, because all depends upon the kind of place the birds are to be reared in. However, this may be taken to apply everywhere—that it is easier to

rise duck in small batches out of covert and from several miles of streams, than from sheets of water where every bird can see all that happens. The driving from pool to pool is oftenest resorted to, but in that case the artificially reared birds are more easily employed as an additional sport to many days than for regular duck days.

At Netherby there have been 10,000 hand-reared duck in a season, and difficulty only arises when it is sought to kill a good proportion of these in one day. Here there are three or four different rearing places or "homes." Most of the eggs have in the past been purchased, and placed under domestic hens in the manner of pheasants' eggs. At Tring Park the eggs are procured by penning off a portion of marsh and water of about 4 acres, and the birds are caught up, wing clipped, and turned out in this, in the proportion of three duck to a mallard. At Tring the young duck are started with some hard-boiled egg, bread-crumbs, and boiled rice, but at Netherby this is done with duck meal; later, they are fed on maize porridge mixed dryish, and later with maize whole and dry. At Netherby they are given a little pan of water to each coop from the first. This has to serve until they are three weeks old, when puddles 30 feet in circumference are made for them; and although ten in a coop is the rule, and they are shut in at nights along with the foster-mother, they crowd in hundreds into these clay constructed puddles. The food is also given in a small pan at each coop. Any method which drops sticky food on the backs of the ducks is sure to lead to trouble. At six weeks old the birds are taken to their permanent homes, which at Netherby are mostly the brooks or burns flowing through the estate.

Wet is not bad for young ducks as long as they can get under the brooding hen, but wet and cold as well is not their best weather, and none of the most successful breeders allow the little ducks to have their fling in large sheets of water, or even ponds or brooks, until they are six weeks old. When quite small, the greatest enemies of the duck are hot sun without shade, and cold wind. In the early stages they are best

fed four times in the day, as at Netherby, where over 1000 ducks have frequently been killed in one day. There they are penned out exactly as pheasants generally are, in a field surrounded with wire netting to keep out foxes.

Obviously in no manner ever discovered can true wild duck be killed in such numbers as these. That they have been caught in numbers equally large in decoys, and could be shot by taking them away from the decoys and letting them out a few at a time in the neighbourhood of the guns, is certain, but it never has been done, and a decoy is only used as a neck-breaking trap to supply the markets with duck, widgeon, and teal.

There is nothing whatever to be said against the hand rearing of wild duck. If they are properly managed, they give far harder and better shooting than pheasants; especially is this the case if they are left long enough to get their mature plumage.

Some difference of opinion has arisen on the best size of shot to use for wild duck. Probably No. 4 is the best size, if the particular gun will shoot it well. The size to be most objected to is No. 6, which has not penetration enough for the body shots at any moderate range, and is not thick enough to make sure of hitting head or neck. If the latter is to be relied upon, No. 7 is better than No. 6, but not better than No. 8. But if this principle is adopted, only shots should be taken when the head and neck is well in view, for from behind these sizes can only wound. They wound a good deal in any case, but when duck are coming anything like straight for the gun (which seldom happens) body striking small pellets glance off like hail. No. 4 shot may not hit often enough to please shooters; but duck cannot take this size away apparently unharmed to die by slow torture. For that reason it is the sportsman's size. The neck and head shot please the shooter, because they alone inflict sudden death in the air, and the work looks to be a clean hit and a clean miss; but when this appearance is obtained by the use of small shot things are not what they seem. Nothing can be said when the game comes down, but every bird missed must be suspected of being "tailored."

All game birds cling to the ground or the tree tops when

they are flying, more or less, as the wind suits them. The real wild duck cling to the water, and follow down the course of a stream in such a way that two or three guns can be so posted as to command the whole lateral extension of flighting duck or teal, except that both these birds are easily scared by shooting to mount far out of gun-shot. When they are mounted they do not necessarily follow the stream, for the reason that they can probably see other water far ahead, and they make for it in a direct line. But as the shots will mount them, so also a succession of men posted in their line of flight will each send them a little higher, and consequently the shooter should not only be invisible to the duck before he has fired, but after also; otherwise he will spoil sport for the next gun down stream, or up, as the case may be.

WILD WILD-DUCK

PERHAPS it is a misnomer to speak of any duck as "tame," it gives a false impression; but by wild wild-duck is meant to be implied those fowl that breed in a natural way, and are only to be killed with much success by artifice. For instance, there are three great varieties of wild-duck shooting besides the punt gunner's business. The most practical of these is "flighting"; the next often "indulged" in, if it can be called indulgence, is "shore shooting"; and the third kind is the "gaze" system that is practised mostly upon the Hampshire Avon and Stour. There are many modifications of this system employed upon other rivers and on chains of pools.

Flight Shooting

Taking these in the order named, it may at once be stated that flight shooting gives beautiful sport, but has the disadvantage that it is selfish amusement, because one cannot invite friends to assist in a form of sport that not only depends much on the weather, as all sports do, but altogether upon it. "Flighting" is the interception of the wild duck in the evening when they come from the sea or other resting-places to their inland feed. Consequently, the line of flight must be known, and besides, this knowledge is not quite enough, because a change of wind alters the course of the fowl, which may be said to have a different line of flight for every wind. But even when the fowler has hit off the correct land spot where the fowl go over, that is not all. The weather counts for much more than this; for it usually happens that upon a still night the duck go

over at so great a height that shooting is out of the question. Then upon a starlight night they are so difficult to see that hitting is out of the question, and it is only on cloudy, windy, moonlit nights that much good can usually be done, and only then is much execution likely if a good head wind is blowing against the fowl. At most, flight shooting only lasts from a quarter to half an hour in the evening. In the morning, when the fowl have fed and betake themselves seawards, it may last a good deal longer, especially if, after those have gone which are not inclined to rest in their feeding-grounds (and there are generally a good many of these), those grounds are disturbed purposely. Flighting is a sport that has one very great advantage: if positions are well chosen — not too near either the day home or the night feeding ground—no harm whatever is done by shooting every day. The fowl cannot be driven away by that means. One hears the present generation of shooters disparaging the easy shots their great-grandfathers gloried in, but flight shooting is as old as the "scatter gun," and it is still the most difficult of all shooting. The author's experience of shooting in the half light is that it is next to impossible to hold sufficiently forward. But this is an observation that he has never been able to explain satisfactorily to himself. It is not suggested that half light travels slower than good light, but merely that the true position of the moving mark is not recognised by the brain as quickly as anything in a good light.

Shore Shooting

This sport is much more affected by the weather even than flight shooting. Speaking broadly, the shore is a good place for a youngster to learn the art of shooting in the early season, say in September. Then the curlews and the golden and green plover will be young, and the most blundering performer will hardly be able to avoid getting near enough for a shot sometimes, and will not be able to prevent an occasional foolish young thing flying into the load. A good many shots will be fired at creatures going low down enough over water for the

splash of the pellets to be a guide to the gunner for his next shot. But too much reliance must not be placed on any such appearances when the bird is more than a foot above the water, because after the pellets have passed the game they will be going so slowly as to appear far behind when they splash the water, even when, in fact, they might have been straight for the mark, or even in front. With shooting schools in such numbers, it is much more humane to rely for education upon the class of shooting given at them than to mangle birds that are of no use when killed. This remark does not, of course, apply to golden plover, which are quite as good food as a snipe, nor to green plover and curlew, which it is said are good food, but only to the terns and small fry that are not eaten.

However, clay bird shooting can never teach confidence and knowledge of what is and what is not at shooting distance. For this reason the saltings and the shore experience of a young gunner are valuable to him, although the real wild fowlers of the district have every right to believe themselves injured by people who constantly disturb fowl by shooting at "rubbish."

The young shooter, then, should not begin by trying to see how far a gun will kill, for it is no credit at all to kill far off. It is the easiest kind of shot, because the "game" is moving relatively to the swing of the gun far slower far off than near by. It may credit the gun-maker to kill a long shot, but not the shooter when he misses the next near one. Consequently, if one must go shore shooting in summer, or before summer visitors have gone, a good way is to make a rule never to excuse a miss as being too far. It is wonderful how, by beginning at near easy shots and never missing, the ability gradually comes to make a gun do its best at farther distance; whereas beginning at long shots teaches nothing, and every miss begets loss of confidence, which is the one thing most essential in shooting.

But from the summer shore shooter to the veteran winter business man of the shore, who makes a living by his gun, or at least makes his day's wages every day he thinks it worth his time to go fowling, there is as much difference as between "W. G." in his prime and the stoniest stone-waller who ever

blocked cricket balls upon an artificial wicket. Your real clever wildfowler of the shore is not born, he is made by a lifetime of experience. He and a new-comer may start out in opposite directions, and the local may in a night and a day kill far more widgeon and duck than he can carry home at two goes (most likely he will take them in a boat), and your new-comer without assistance may never have been within shot of fowl all the time, and probably will only escape the rising tide by the help of Providence.

A would-be shore shooter, then, can only succeed by placing himself in the hands of the best local fowler he can get to take on the job. This remark is equally true with regard to the old sportsman from elsewhere as it is of the novice down for a holiday. It is not here only a question of the weather, but largely also one of geography. Every creek through the mud flats has to be mapped out in the mind of him who would make use of creeks in order to stalk wild fowl. Every bank at low tide must be an hour-glass, to indicate just when it will disappear and the feeding fowl will be washed off their legs and will have to find other feeding-ground. Those fowl know already where they are going for food the instant they are flooded out, and your real fowler knows it too, and maybe is lying up in a mud hole to intercept them. A mud hole does not sound like a bed of roses, but, by one who understands it, can be made quite comfortable for a winter night's sport with the mercury registering 15 degrees of frost. Indeed, it is not much good at any other time. It is only in the very wildest and worst of nights and days that wild fowling is at its best. There must be snow for choice, and frost also, even on the seashore. In fact, the weather must be so hard that the fowl can only feed on mud flats that are tide-washed, for the reason that everywhere else the ground is too hard, and too much covered with snow and ice, to enable ducks to reach the mud bottoms of fresh water, or to enable widgeon and teal and geese to feed elsewhere at all. About once in ten years we have six or eight weeks of such weather, and then the favoured spots swarm with fowl of all kinds to such an extent that for miles and miles

along the coasts birds on the mud and in the air appear almost as numerous, and as all-pervading, as the great fat snowflakes that have little less of wills of their own than the fowl themselves, and are little less playthings and creations of the air and water.

In such wild weather three shots at knotts have resulted in a bag of 600 birds, to say nothing of the wounded. Then grey geese and brent fly low, and follow the receding, as they have to move from the flowing, tide; for they are always hungry, and it is no time to be particular. Ducks then feed as much by day as by night, and geese possibly as much by night as by day; for they are starving, and grow so poor in condition when this weather lasts long as not to be worth shooting, or sending to market when shot. It is as if the lion once more lay down with the lamb, for the birds become almost fearless, and quite careless of their mortal enemy man, who in the beginning of the storm rejoices in his victory over the most wary fowl of the air, as the grey geese are, and in the end hopes the weather may soon break to save the lives of the poor useless things.

How is it that the fowl that are migrants, and have already come perhaps 2000 miles, are caught like this, maybe upon the north Norfolk coast, when by flying away to the west coast of Ireland or to sunny Spain they would find the condition of temperature they require and lots of food? Probably those that were there when the weather started its avian trials did that, and possibly the multiplication of migrants, as the storm continues, are birds that have already had a thousand miles' race to ride before the storm and have been worsted in the attempt. If so, their weakness and want of food is the cause. They have not the strength to cross snow-covered England, where they could get no bite nor sup on the way. In other words, they perish, like Mrs. Dombey, because they have not the strength to make an effort.

It is not these belated and consequently starved birds that the shore shooter wants to make the acquaintance of, but the first to arrive on the wings of the storm, and consequently any aspirant to this kind of sport should keep in touch with the

best local fowler whose services he can buy. The latter must telegraph the instant that the weather and the fowl together forecast the coming storm, and the birds know before thermometer and barometer together can indicate what is to be. Then the gunner must take the first train and telegraph to his fowler to make all arrangements, otherwise there may be a day's loss of time when he does arrive, because his fowler will be where the thickest of the fowl are, and there will be nobody left behind who knows exactly where that is at any precise period of the day or night. All who do know will be engaged in the slaughter for themselves, for on the free saltings and the shore all men are equal who are good fowlers, and the others do not count.

When such weather as this comes, history is going to be made, history that will last a hardy honest small community a decade or more to discuss, and for the robust it is well worth joining in, but it is also worth paying for, and a good price too. It is true that by showing you around a wildfowler does not lose his own sport, or not all of it; but unless you are a good sportsman as well as a good shot, your joint bags will not equal that of an experienced fowler by himself, and consequently luxuries at zero and in a gale of snow have to be paid for on a basis far higher than ordinary keeper's tips. That is, they have to if you want to come in for the cream of the sport.

The "Gaze" System

The "gaze" system of shooting is a Hampshire Avon equivalent for the shooting from tubs that has been practised for many years. The shooting from the latter is much more suitable for large marshes and open sheets of water, whereas the "gaze" is a brushwood or furze construction suitable for the river bank. But they are alike in this—that the shooting of many guns keeps the fowl upon the move, whether they ring round pools and marshes or follow the course of a stream. The habit of all fowl to prefer flying over water enables a duck "drive" (for these two methods are duck drives) to be success-

fully brought off without drivers. We have read of Mr. Abel Chapman's success by the tub method in the Spanish marshes, and also of a royal son of King George III. and his want of success in shooting fowl from a tub on the Berkeley Castle haunts of the wild goose. At the latter other methods are now adopted, but the sport is not very great, although this is because of the difficulty of getting shots, and not because of any scarcity of fowl. Mr. Chapman had splendid sport in Spain, but the fowl there were greatly in excess of their numbers in England, and besides, they appear to have flown conveniently low. Much shooting by many guns generally makes the fowl mount very high, unless the shooters are very widely distributed, and really the great objection to wild wild-duck is that they take a mean advantage of the gun-maker, and often fly at heights no shot gun will reach them. But very much depends on the frequency with which they are disturbed, and unquestionably they have very pretty days of sport on the Hampshire rivers by means of these "gazes." Where there are very many birds some will be certain to fly low enough to shoot, and they do not usually mount, in flying down a river, as they do in circling round a pool, to see whether a descent is safe. Probably this is because they believe themselves to be leaving danger behind when following the course of a river.

In making these "gazes" it is necessary that there should be protection from the sight of the fowl coming from both up and down the river, and also that the shelters should be so arranged as to enable shooters to get into them without flushing fowl close by. The way the shooting is arranged is for the manager to point out each man's "gaze," or hide, or butt, to him, and give him just long enough to get there a minute or two before shooting is to begin. Each gunner is requested not to fire until a certain time by the watch, which is fixed upon so as to allow the man with farthest to go to comfortably reach his "gaze" before time is up. Mr. Robert Hargreaves, who has done a good deal of this kind of shooting as well as most others, is of opinion that teal for the second barrel give the most difficult of all shooting. He describes the action of a company of teal

as like the bursting of a bomb when they are shot at by the first barrel, so that for the next shot the game may be anywhere and going in any direction. This seems very admirable description, but it is only thanks to those "gazes" that the first shot is not just as difficult as the second. The teal seems to be the only bird that can set the laws of gravity wholly at defiance, and at the glint of a moving gun can shoot straight upwards, *apparently* at the same speed it was travelling forward before being frightened. Often the bird is by this means out of range by sheer altitude before the shooter has recovered from the intended allowance ahead that he expected to have to give, and began to swing for, before the teal converted themselves into living rockets, and thus disconcerted the shooter.

The beauty of this kind of duck shooting is that every species of duck has a different flight from its successor, that the shooter never knows what is coming, nor from what direction it will be. One never does see all the grouse that pass near enough for a shot, and then one is only watching one way; but in "gaze" shooting it is necessary to watch every way. This is essentially sport in which humanity in a double sense is the best policy. To shoot farther than you can kill is to wound duck that will possibly die out at sea, and it is also to send all the duck within hearing up one storey higher, and to spoil the sport of your fellows as a consequence.

The best sizes of shot for duck are probably No. 7 or 8 if reliance is to be placed upon hitting head or neck, or No. 4 if it is desired that body shots should kill. Probably No. 6 is the very worst size to use, because it has power enough to get through the breast feathers but not through the breast bone of a duck at a moderate range. No. 8 does not appear to the writer to do much damage to a coming duck unless it catches him in the head and neck, and then it is fatal, and that is all that can be said of No. 6, which has so much less chance of hitting the vitals. There is a very well developed horror of plastering, and that is the reason why No. 4 is very popular for wild duck. A choke bore and No. 4 shot are a good combination for this sport.

Flapper Shooting

Flapper shooting is killing wild duck before they have got their full powers of flight. Its sport consists in getting shots. Very good spaniels are wanted to make the flappers rise at all. They are very easy to kill, and even teal flushed before the sportsman are about as easy as a sitting mark. Indeed, to some people they are more easy, because a sitting mark is very often missed not only by pigeon shooters but also by platers of guns.

Encouraging the Fowl

It seems curious that wild fowl that spend most of their time in the water particularly dislike wind, but so it is, and in making teal pits or improving them, or in attracting fowl to a river, the more artificial shelter you can afford the fowl the more they will be attracted to your water. Near the coast this is generally well understood, and there, too, the roughness of the sea greatly influences the birds to seek peace and shelter inland; so that there are naturally good days and bad ones for shooting from the "gazes." In a smooth sea and fine weather duck seem to prefer to go to bed, which they do in the daytime, on the sea. But in rough weather the majority will find out any quiet places on fresh water where the presence of other duck prove to them that there is safety. For this reason some half-tame wild duck are a great attraction to the really wild ones, but the former can be only kept at home by good feeding, for wing-clipped fowl are *no* attraction to the really wild birds. Home-bred birds appear not so much to attract as to go and fetch the wild ones, and this is the reason that wing-clipped birds will not do. On the "gaze" system 800 duck have been killed in four days' shooting by a party. Mr. John Mills, of Bisterne, using an 8 and a 12 bore, has killed 130 fowl in a day from one "gaze," and on one occasion 100 cartridges were shot away from one "gaze" in a few minutes, and the shooter ran out of cartridges and had to stop and look at the fowl for half an hour. He killed 60 duck, and thought he could have doubled his bag with another

100 cartridges. This was at Lord Manners' place, Avon Tyrrell In parts of Dorsetshire as well as Pembrokeshire a great deal of attention has been given to the formation of teal pits and the cultivation of wild wild-fowl, but the biggest bags made have fallen far short of those mentioned above, possibly because the fowl are generally taken in an ordinary day's shooting of other game, and not in specially arranged big days.

RABBIT SHOOTING

FROM potting the unsuspecting rabbit sitting at his front door, and spoiling two blades of grass for every one he eats, to killing rabbits hunted out of heather by spaniels, there is nearly as wide a difference as the whole range of the shot gun embraces. The rabbit is said to be the schoolboy's game, but the schoolboy might fairly retort that this is because the seniors cannot hit him. He is certainly the easiest and also the hardest to kill of all the British food for powder. It just depends upon how he is treated whether he is worthy to be called a sporting beast or not. A rabbit in strange ground, or one that knows he cannot get home, is the poorest-hearted little beast possible, and is even too much afraid to run away. Then we are often told what splendid sport rabbits make for the gun when hunted by beagles. This is a fraud. It sounds pretty, but in practice all the rabbits but one will be sitting up trimming their whiskers with their fore feet and listening to the direction of the hunt, for the beagles' pack, and so only one rabbit is being hunted at any one time. If you are watching a rabbit and hear the hunt turn, you will get ready for the time the creature runs. But he will not run; he will merely hop quietly out of the line of the hunt, and sit up to listen some more.

In bracken that is not too thick the rabbit may bolt, but when it is very thick the author has watched rabbits defeat a whole team of spaniels by the higher strategic operation of sitting quite still. In this stuff you see them at your toes, much too near to shoot, and cannot see them at all when they are far enough away for half a load of shot not to smash them. If you want pretty rabbit shooting, you must have dogs that

do not "open," or else beaters. In fair undergrowth, in which one can just see to shoot sometimes, rabbits when at home will make for their holes fast enough, and they take shooting. But for difficulty in covert they are as nothing compared with rabbits that have well used runs through fairly long heather. Sometimes in running they will be under the heather, and even under the level of the ground in the broken surface; sometimes they will be above the heather. You will probably try to shoot a little in front of them as they turn and twist along their runs at great speed, but nothing makes a shooter feel so foolish as shooting so much in front that the quarry never at any time gets as forward as the shot went. The heather rabbit is quite capable of creating this feeling, for when you lose sight of him he frequently changes his course just as if he knew that his enemy was noted for shooting well in front. Where under covert is very thick indeed, the author has never seen pretty rabbit shooting, although he has seen fearless spaniels trying to make the rabbits run, and succeeding in making them crawl and hop by turns, but run very rarely indeed. They seem to know that the spaniels cannot catch them in such places. Rabbit shooting on a grand scale is nearly always a failure. You kill the numbers, no doubt; but in order that you should do it the rodents have been ferreted or "stunk" out of their holes, and the latter have been stopped up, and most of the quarry appear to know they are in a trap, and are philosophical enough to think that it is useless to run without having a place to run to. You can certainly drive rabbits past the guns, but you cannot always make them run. In only fairly thick under covert, with rides for the guns to stand, fair sport is often obtained. You may see the rabbits come up to the ride and then stop and hide. They fear to cross. Then, when they are obliged to go, they make a rush of it; evidently they know their danger, and think safety lies in speed. If they can be got to cross like this, there is sport in it, provided the rides are not too wide. If they are wide, you make a certainty of your shot, and the sport is less. The best sporting width is that which causes an uncertainty as to whether the shot succeeded, and an examination in the bushes to see

whether the shot was well or ill timed. That is to say, the best sport is when the bushes take up a lot of the pellets and the rabbit is out of sight before the snap shot is off.

Gas tar is as good as anything to keep rabbits out of their holes. It is not bad when properly employed to get them out. But as strong-smelling stuffs are generally used, they keep the rabbits in their holes for one, two, or three nights, until hunger compels an exit past the paper dipped in tar. It is a good plan to put the paper down the holes only on the windward side of the burrows; this has the effect of blowing the smell through the whole of the compartments, but leaves open bolt holes where nothing will impede. The next day the other side of the burrow can be doctored, and this will prevent re-entry. After this, shooting may take place without many uninjured rabbits going to ground, but the wounded will go in and die there; consequently, there is nothing like stopping out if the rabbits can be got out. A very effective plan for this is the use of a line ferret. It is best not to let the ferret try and bolt the rabbits; that takes too much time. But if it is run through the holes one day and tar-paper is inserted the next, most of the rabbits will be found to have had pressing business elsewhere. Consequently, they can be shot, and give better sport than if they had been subjected to back-scratching by the ferret's poison claws. But probably the best way of all, where the holes are not amongst rocks, is to fill up all entrances with a clod of soil or turf and sprinkle the latter with gas tar or spirits of tar. Twenty-four hours later the process has to be repeated, for the rabbits will have scratched out. This should be repeated every day until the shoot occurs, but only the first stopping will be much trouble; there will be few holes to stop afterwards. In trying to make a big bag it is very necessary to put down netting to keep the rabbits off the beaten ground. Stops will do, but are not as effective as the net.

The preservation of rabbits implies, of course, the destruction of vermin, especially cats. The next necessity is fresh blood in January or February, and early and close shooting or trapping. Rabbits degenerate quicker than most animals, and in-breeding

and stale ground are the worst causes. On some soils lime-dressing seems to be absolutely necessary for the continued health and reproductive powers of rabbits in warrens. Out of warrens, and especially where they are not wanted, nothing seems to injure them. Neither disease, vermin, nor the school-boy's gun will do them any damage where they are not encouraged. This is probably because they are most healthy where they are most scarce, and it is only nature's justice that if they poison the grass they should poison themselves also.

Shooting rabbits over ferrets requires much more attention than it is worth. The rabbit always seems to bolt well when the shooter is not attending; when he is all expectation, the rabbit comes and looks at him, pokes his head out of the hole, where to shoot him would be to destroy his value. Then, just as the ferret must be getting up to the quarry's tail to make him bolt, the head disappears and is seen no more. Then in ten minutes or half an hour the experienced person says it will be necessary to dig, because the ferret is lying up, or if he is muzzled he is probably pounded, with rabbits' backs to scratch on all sides of him, but no rabbits to bolt. Then, when the most unexpected event does take place, and the rabbits do bolt well, those you wound are sure to go to ground with a broken leg or shoulder, and so stop proceedings, either by detaining the ferret or by informing their fellows. Ferreting is not nearly as good sport as shooting stopped-out rabbits. When beaters for the latter are used, they should make no noise. The object is not that the quarry should quietly canter along in front of a line of guns, but you will want them to lie well, so that when disturbed in close contact with some beater's stick they may run well. The former they will do if there is fair covert to lie in and no noise, not even "tapping" of sticks. The latter they will do if they are poked up with a stick instead of being thrashed up with a stake. The biggest record of rabbit shooting is that of 5096 rabbits to nine guns in the day. This was in 1885, in Mr. J. Lloyd Price's Rhiwlas warren. The load of shot best for shooting warren rabbits, or any others if other game is not to be bagged, is ¾ oz. of No. 3 shot. This saves

plastering, and enables both near shots and long ones to be taken. It was the load used with Schultze powder when the bag above mentioned was made. Perhaps it is not correct to talk of a bag of rabbits when such wilful slaughter occurs. There must have been between seven and eight tons of rabbits for that one day's work.

If rabbits come out from a covert to feed in a rough banky grass field, one that will afford good sport if the rabbits lie out in it, this can be brought about by means of wire netting, the lower part of which is set so as to fall by the pulling of a string. However, half the fun is lost when rabbits are shot out of woods. This plan for keeping the beasts out of their coverts is perhaps more useful in snow when the trees are in danger, and when, too, the rabbits highly appreciate the hay in the sheep racks. Indeed, feeding with £5 worth of hay would often save £500 worth of young trees.

The enclosing of warrens with wire netting is a simple matter, and the principle should be that rabbits can get in but cannot get out. This is easy enough to arrange. There must be turned-in wire at both the top and bottom, and turned-out wire at the bottom. This rests on the ground, and there is no need to put it underneath. About 6 inches of turning-in is enough. Three feet 6 inches is about the best height for wire, although if the ground is quite flat probably 3 feet and an over-lap of 6 inches to prevent climbing from the inside is enough. Then if, on the outside in several places, a wall of turf is built as high as the fencing, and a single turf is laid as a lead on to the over-lay of netting, rabbits will enter freely, but will not get out again. It is thought best to use graduated wire, very small at the ground in order to keep in the young ones, but it may be that the warrener will wish the young ones to fare the best, and in that case, if the crops outside permit, it may be a help to the young rabbits to let them escape through netting that keeps in the old ones. They will all come in again some time by means of the external turf walls, and then, having grown big, will have to remain.

HARES

TO the insular Britisher there are only two sorts of hares, the brown and the blue. Possibly they cross breed, but naturalists are mostly opposed to this view. However, if they do not cross, the writer has seen specimens in Caithness which he could not assign to either race. Nowhere else in Scotland does there seem to be much ground inhabited by both species.

The blue hare is not only a creature of the moors, but of the top moors. The brown hare never goes up there by any chance but he often occupies moors of low level bordering the cultivation. In Caithness the highest tops are usually not very high, and the blue hares are often found on the moor only a few feet above sea-level. Consequently there are opportunities for cross breeding which in the other counties rarely exist.

Hares are said to be very prolific, but as a matter of fact they increase only very slowly: what they might do in more favourable circumstances is another matter. One writer affirms that when a brace was confined in a walled garden there were 57 hares counted at the end of one year. That is possibly correct, and yet the hare does not breed well in confinement, which is the reason that parks are more often devoted to deer and sheep than to hares, even when they are nominally hare parks. The late Lord Powerscourt introduced brown hares into his park in Ireland, where they did not increase; and the late Mr. Assheton-Smith, of Vaynol Park, introduced the blue Alpine hare there. In Ireland the latter is indigenous, but does not in winter change to white, with tips of black upon its ears, as it does in Scotland and upon the Continent.

Country Life has lately reproduced a photograph of a family

of six brown leverets, and it is evidently wrong to affirm that from two to five is the limit of numbers produced, as was done in *Country Life's* Shooting Book. Seven is the greatest number reported, but this requires confirmation. What has given the impression that two or three are the usual numbers produced is the fact that the hare does not seem to confine herself to one nest. All her eggs are not put in one basket, and this is instinctive wisdom; for little leverets give out a good deal of scent even when quite young, and are easily found by foxes and dogs. Cats are not fond of ranging the open fields, but prefer hedgerow and covert, so that they are more dangerous to young rabbits than to leverets, which are generally placed in the open fields without any sort of nest or other protection than the great space about them.

Very large bags of hares have frequently been killed. Lord Mansfield's Perthshire bag of blue hares once reached very nearly 1300 in the day to five guns, and over 1000 brown hares are said to have been killed in the day quite recently. That the author has not verified, but formerly they must have been nearly as plentiful in Suffolk and Norfolk as they are now in parts of Bohemia and Hungary. Count Karolyi, for some years Hungarian Ambassador to the Court of St. James, once attempted to make a record: he killed to his own gun 600 hares in five hours' shooting. It is not this unique feat for which Hungary is most noted, but for its constant supply over a large number of days. There they do not usually kill hares during partridge shooting, but delay the big drives until November. Nevertheless, at Tot-Megyr, six days' shooting by nine guns produced 7500 hares and 2500 partridges. Probably Mindszent, in the south of Hungary, holds the record for a day at hares, for 3000 were killed there by Count Alexander Pallavicini's ten guns.

Big bags of hares are no new thing in that country, for as long ago as 1753 over 18,000 hares were killed with equal proportions of partridges in 20 days' shooting by 23 guns, including the Emperor of Austria and the Princess Charlotte. In Suffolk, in 1806, a complaint of the number of hares left on

one estate was followed in the early spring by the killing of 6012. Whether this slaughter satisfied the farmers or no is not stated. Probably the biggest shoots of hares occur in the United States, where the animals, almost precisely like our own brown hares, are called "jack rabbits." They have become so troublesome to farmers that the latter turn out in regular armies when the "trouble" becomes worse than usual, and the "jack rabbits" are done to death in countless numbers. Another kind of hare found in the States is the "cotton tail," which in all outward appearance is precisely like our common rabbit, except that it does not burrow. It is the perquisite of the nigger dog, and if he is there, of the nigger dog's master.

The "jack rabbits" give splendid coursing and a fine scent for hounds; the "cotton tails" do neither, but gun-dogs invariably point them. The hunting of the hare is probably the oldest of all sports now practised. It was rated high by Xenophon more than three centuries before the Christian era, and Xenophon would have made an excellent master of harriers in our day if we could have induced him to leave his nets at home. The fox never took precedence of the hare until earth-stopping was invented, and without it the former would even now be the less worthy as a quarry.

The brown hare prefers the open country to the woods, and is never found in the latter until haytime and harvest have driven it out of the fields. Even then it may take to a fallow field in preference to the woods, and the author has known a little 10 acre field to have more than 100 hares in it upon such an occasion. In wet dripping weather—that is, when the drip falls from the trees in covert along with the falling leaf—hares prefer to make forms in the open fields. These they will return to daily for weeks together, unless they are disturbed. But if they are put off their forms they do not often come back to them again, but make new ones. Consequently, if it is desired to have a great day's covert shooting, including hares, the open country should be beaten for them several days before. The fact that they are disturbed will send them into the coverts. On the other hand, after the coverts are beaten,

not a hare will be found in them for some time, whereas all the pheasants that are left alive will be back to roost the next day at latest, unless they have been driven to coverts that they know and like equally well.

People affect to despise shooting hares, and when they are driven out of coverts into the open they are of course rather more easy than pheasants fluttering up at a corner; but in high undergrowth, in covert or out, they are much more often missed than pheasants. In standing barley they are very difficult, and if turnips are really high they are not easy there. But the author has rarely seen clever hare shooting when the beasts have been driven up to fences in the low country, and up to the hilltops in Scotland. It is true that if only one or two hares come together, it is simplicity itself to handle them, but suppose four hares are each seen 20 yards apart coming up to your stand. If you can kill the four, you understand woodcraft as well as shooting. If you do not know the former, you will get one or at most two hares and frighten the others away. Your object will be to get all the hares nearly together before you take the farthest off one, then the next farthest off, and you will have two very much scared hares starting probably from your very feet for your second gun. The shooting then becomes extremely difficult, because it has to be very smart indeed. Sometimes, instead of four you may have twenty hares all within 80 yards, and it has been known that by shooting at the first within range all the rest have escaped without a shot. It is the habit of blue hares to follow each other up the runs through the heather or over the moss and stones; when one stops, the others seeing him stop too. Consequently, the way to get them together is only to stop the first hare when he has approached near and is also out of sight of the others behind, which any little unnevenness of the ground accomplishes. A sharp "click," which was most easily accomplished by cocking a gun in the days before the hammerless, is enough. One stone rapped once only on another will do it. But the hare must not see that, or any other movement, or he will be off at once. If he has not the advantage of the wind, and so

cannot get the scent of the guns, a hare would run between a shooter's legs without seeing him if he stood absolutely still and bestrode the hare track. But it is the "absolute" that makes all the difference. Some people say that a hare cannot see straight in front of it, but this is a mistake; it can detect the smallest movement although directly in front, and if it will almost run against you, it will not allow you to walk from the direct front up to it as it lies in its form.

When hares are wild, they sit high in their forms, and can be seen from a long distance. However, when they mean to lie close, they are remarkably difficult to see even upon open ground, except to those who know what to look for, and the most experienced will often pass them. Private coursers, especially when mounted, get extremely clever at finding hares in their seats. In beating for them, when they are not wild, the drivers who take a straight course will miss three-parts of the hares, but if they zigzag, making half-turns suddenly, every hare will believe itself seen and will run.

In beating flat country for hares, very much the same order as in partridge driving in the open, and as in pheasant beating in covert, has to be adopted. Stops and flanks are a necessity, but in driving moorlands a very different system is adopted. The hares there will all make up hill, no matter which way the beaters walk, so that a continuous circuit round the hills, beginning at the lowest level and cork-screwing upwards, is the plan if there are not enough beaters to cover the slope at one operation. If there are, the beating is done as if it were the desire to drive the hares along the slope or face of the hill, but as they will all pass along the front face of the drivers and mount the hill either near or far on, the guns will take up hidden positions upon the tops. Any other system of driving blue hares has been found from experience to be more or less misdirected energy. These animals are not very much liked in the deer forests, because the deer understand the hares' movements as well as if they talked to each other, and a startled hare usually means also a startled stag in the stalking season. But in grouse ground the hares should not be kept

very low in Scotland. Nowhere are you very far away from a deer forest and eagles, and the latter are satisfied to leave the grouse alone if they can get blue hare in summer and white hare in winter. The Alpine hare is much easier for an eagle to catch than either grouse or ptarmigan.

As to brown hares, they can only be plentiful where the relations between landowner and tenant are of the very best. The latter can, if they like, kill hares all the year round. Good land, a liberal landlord, and yearly tenancies are the conditions under which hares can thrive. The author likes to see plenty of them as proofs that the tenants are not unsportsmanlike, and that the keepers are friendly with the farmers and enemies to the poachers. Opposites in both cases have not been quite unknown.

It has been said that hares can be "called up" by poachers. Perhaps that is so; the only cry of the hare the author has heard is that distress note that will often, on the contrary, drive away the other hares. If they will come to call, they must be in the habit of calling. It is the note of the doe hare that is supposed to be imitated. If she calls her young she has no cause to call the "jack"; she is found by him by the trail scent, and is worried far more by his attentions than she likes. It is not uncommon to see half a dozen "jacks" persecuting one doe hare, and continuing to do so for hours if not for days together. The "jack" seems to hunt the trail of the doe when it is hours old, and long after any harrier would notice it.

The esteem in which the hare was held in the Middle Ages is shown by a verse attached to an English translation of the Norman-French *Le Art de Venerie*, by William Twici, huntsman to King Edward II.:—

> "To Venery y caste me fyrst to go,
> Of wheche iiij best is be, that is to say,
> The hare, the herte, the wulfhe, the wylde boor also;
> Of venery for sothe there be no moe."

Who wrote the verse does not appear to be accurately known; evidently it was not Twici.

SNIPE

SNIPE shooting is the fly fishing of the shot gun. There are only three species of snipe that regularly visit England, and only one that breeds here. This is the full snipe. The great solitary or double snipe is rarely seen, and as a sporting bird, therefore, does not count. The jack snipe is far the most beautiful, and is met with some years in fair quantities, but is rarely found in greater proportion than one to five of the full snipe. The jack snipe is rarely missed by a deliberate marksman, but a snap shooter who is used to the quick and zigzag rise of the full snipe is often able to miss the little jacks, for their flight is almost that of a butterfly. Besides, the jack snipe has a very trying habit of pitching down suddenly as if it were badly wounded, when it becomes tempting to the shooter to go and pick it up with his gun at safety. Then the little creature is remarkably hard to move a second time, and thus suspicion becomes apparent certainty, so that when the shooter is about to give up all hope of finding the dead bird the quick one flies slowly away, unharmed by a hasty shot, or by the concentrated language which sometimes is mistakenly supposed to follow. The jack snipe is the comedian of the gunner's quarry. This 2 oz. bird is not much of a mouthful for a big retriever, and the only reason it is not usually injured by even tender-mouthed dogs is probably because it and all the other species of the family are naturally offensive to the taste of the dog. They never would be retrieved from choice, and the duty has generally to be forced upon the young canine assistant of whatever breed it may be. Not many jack snipe come to us before October, but a few have

been found in September, and in every month in the year, which has given rise to the speculation that they might have bred here, but that has never been proved to have occurred by the discovery of eggs. They are migrants from the North, frail creatures which surrender themselves to the wind, and apparently thereby avoid the wave. At any rate, large numbers of them do survive, although doubtless many in adverse winds miss the coasts and perish, like woodcocks, in the Atlantic Ocean. The course in the air taken by these birds is not well known. It has been affirmed that many woodcock arrive first on the north and west coast of Ireland, and most of the jack snipe on the south-east coast, and although we are inclined to regard instinct—and the migratory sense is an instinct—as an uncontrollable impulse which always acts in the same way, it appears to have results that are not to be thus accounted for, and the birds arrive in turn on all the coasts and by various routes.

The Wilson snipe in America is closely allied to our full snipe, although it ranks as a species. It is even more migratory than our own bird, some of which always breed in England, Ireland, and Scotland. But the Wilson snipe leaves the Northern States in the winter and makes its way to the lands warmed by the soft airs off the Gulf of Mexico. Snipe, then, in most of the States are only to be shot in the autumn and spring migrations. Probably the finest snipe shooting ever experienced in America, and only to be matched in India and Burmah, was that obtained by Mr. Pringle in Louisiana, an account of which he has published in book form.

The full snipe generally utters a sharp cry on taking wing, the jack is silent; but the breeding cry of the former differs materially from its note of fright, and at the same time that it utters the former it sometimes shoots downwards and makes another air vibration with its wings or tail. This has been said to be a vocal sound, but the author is quite sure this view would not be held by anyone who watched the bird through a field-glass. It may be seen to descend while making the noise which has given it the rustic name of "heather bleater," and it does this with a closed bill; but upon occasion it opens its bill,

and then the vocal sound, as well as the other, is distinctly heard.

The powers of flight of the full snipe vary with the time of year. The author once knew a grouse shooter of long experience and success who prided himself upon his skill as a snipe shot. When, however, he was for the first time in his life taken to a snipe bog in November, he never let off his gun. The birds, he said, were too wild to shoot; but others shot them, so that it may be said there are snipe and snipe. These birds seem to feed all day and all night too; at any rate they may be found upon their night feeding-grounds at all times of the day, and so fond are they of favoured places that they return to them constantly. Moreover, if one bird is killed on a favoured boring ground, another almost invariably takes his place in a few days if the weather remains the same. If it does not, every snipe in a neighbourhood may be gone in a night. Snipe are dependent upon food they find by boring in soft earth, so that frost compels them to change quarters. As a rule, wet weather disperses snipe all over the mountains and fields; they can then feed anywhere. Frost sends them into the bogs, and still harder frost to the springs, still harder again to the west coasts and to Ireland.

Two occasions have been recorded where snipe collected in hundreds upon dry arable fields, where apparently there was nothing for them to feed upon, and where they returned after a snipe drive had been instituted.

Many are the "certain" methods of getting on terms with these birds, but they are all to be taken with a grain of salt. Whether snipe will lie best when hunted for down or up wind, and whether they should be shot upon the rise or when their twisting is done, are questions to which different and emphatic answers are often given. However, we believe in each by turn and nothing long. The snipe is too changeable a creature to conform to any rule whatever. He is nearest consistency in rising against the wind, but even that depends upon the rate of the wind. When it is only blowing gently, the snipe can rise away from you as you walk down wind; but they cannot

do so in heavy breeze, and consequently walking down wind gives the easiest shooting, and sometimes also enables a better approach to be made to the birds. On the other hand, if your feet are cracking up ice, you will probably not get near to the birds however you attempt to approach them, and they can hear you farthest off when you are beating down wind. In very wet bogs a dog will generally flush more snipe than he will point, but when they will lie to a dog, down wind is still the best way, for although your setter will sometimes flush by accident, he will point a great many that otherwise would not rise at all, and this little 4 oz. bird gives out a great scent, one that in favourable conditions enables a dog to find him at 50 and even 100 yards. A curious feature is that young dogs do not object to pointing the game, although they hate to mouth it. Indeed, it is only upon close approach to a dead snipe that a retriever first shows his abhorrence, just as if he were suddenly taken by surprise in his pleasurable anticipation of mouthing the game. In the *Snipe and Woodcock* of the Fur and Feather Series, Mr. Shaw gives the 1376 snipe killed in the 1880–81 season as the best ever made in the British Islands, but this is nothing compared with Mr. Pringle's work in Louisiana already referred to. His best season was that of 1874–75, when his own gun killed 6615 snipe. In twenty seasons there he killed to his own gun 69,087 snipe, and his best day, on 11th December 1877, gave a bag of 366 snipe. Britishers may be inclined to doubt whether the Wilson snipe gives the same difficult chances as our own full snipe, but their habits are identical, as also is their flight. Probably, therefore, it may best serve as a guide to shooters if instead of the author attempting to decide which method of beating is the best, he quotes Mr. Pringle's words, for he surely is the champion snipe shot.

First, then, he preferred full choked hammerless guns by Purdey, and he used No. 9 shot, with sometimes No. 8 in the second barrel. Presumably these were American sizes. When the game was scarce, Mr. Pringle used a pointer or setter in the ordinary way, but when there were lots of

snipe he only allowed the dog to point dead, and not to retrieve.

He found that there was great loss of shooting unless he himself walked to the fall of every dead bird, as others would be sure to rise near the spot and get away unshot at when this duty was done by deputy. Then this champion snipe shot preferred to beat down wind with a beater each side of him, but when he beat across the wind, as would be done if the ground was awkward for the other method, he had both beaters down wind of him, because of the habit snipe have of rising into the wind. By having the beaters a little behind him, as well as on the down-wind side, he thus got shots at birds they flushed, which would not have been the case had they been up wind of the gun. When the end of the beat was reached, time was saved by driving back, over the ground already beaten, to take another down-wind beat. The ground must have been particularly sound for good snipe bog. Walking up wind was sometimes necessary, and then the arrangement of the beaters, of which there were two, was the same as for the down-wind beat, but the wilder the snipe were the farther behind the gun the beaters' line was formed.

Mr. Pringle only used one gun, had no loader, and explains that with a second weapon he could have killed many more birds. Probably most people will not be sorry that he did confine himself to one gun.

The best snipe bag made in England in a day does not at all compare with that from the New Orleans district just quoted. Mr. R. Fellowes is credited with 158 in a day, and Lord Leicester at Holkham, in 1860, with 156 to his own gun in the day. In County Sligo 959 birds were killed in the season 1877–78 by Mr. Edward Gethin; and Mr. Lloyd in 1820 wrote that he accounted for 1310 snipe, whereas Mr. Mottram in the Hebrides in 1884 killed 992 snipe to his own gun by the end of October. Sir R. Payne Gallwey tells us of an Irish bag of 212 birds in a day by one gun before the time of breech-loaders, but does not mention the shooter's name.

The moon has been credited with a good deal of influence

upon the behaviour of snipe; this is on the ground that they cannot feed in the dark. But what is dark to a night bird? Probably there is no such thing; certainly the fly-by-nights do not kill themselves by flying against trees, and more than that, the snipe never does feed by sight. He bores in the ground to feel for the worm; when he has felt its position, he brings out his bill and thrusts it in again in the right spot, and out comes the worm. Then he repeats the process. If these birds are not always hungry, they must stand guard over their favourite boring patches until they get so, for they rarely go away from them to rest upon foodless ground unless they are disturbed either by men, dogs, or weather.

Very few men ever excel in snipe shooting. The actual aiming at a snipe is the difficulty. He may be there when you aim, but is not there when the shot arrives. If you wait until he has done his zigzag flight, he is almost sure to be too far off. If you can shoot just above him, when his wing goes up for a twist, and at a distance of 40 or 45 yards, with No. 8 shot, you will probably kill him. That, however, is not very helpful advice, and the only thing that the author can say that is likely to be so is that the snipe becomes easy, by comparison, when he rises against the wind and shows his white breast to the gunner. The author has killed fourteen August snipe in as many consecutive shots, but he has done no such thing with November snipe on a crisp day, and it would therefore ill become him to say how it can be done, for the very good reason that he does not know.

The snipe is credited with great pace, but in shooting driven snipe it soon becomes evident that they do not require half as much allowance as a partridge. It is the twist that makes pretence that they are actually fast. They are particularly smart and quick, but distinctly not fast in the sense that a driven grouse down wind is speedy.

WOODCOCKS

WOODCOCK shooting over a team of spaniels is the fox-hunting of shooting, according to Colonel Peter Hawker.

It is generally stated that woodcocks are decreasing in numbers of late years, but this is possibly a mistake. At any rate, Lord Ardilaun has at Ashford made the biggest bag ever known in Ireland only eleven years ago—namely, 205 'cock in the day; and in 1905 the record bag for Cornwall was accomplished, but this is far from being the record for England also. Still, there is no proof that because a big bag is made in one day that there are as many birds as formerly killed in any one season. Be this as it may, our method of covert shooting is now very much in favour of the woodcocks. Formerly, when they were the principal game of the coverts, the latter used to be beaten as often as it was believed there were woodcocks in them. Now this is by no means the case. Coverts are beaten once, twice, or thrice in a season, and times are fixed with no regard whatever to the woodcocks. If it is an open season, the inland woodcocks are likely enough to be there when the date for pheasant shooting comes; but if hard frost has set in the birds will have gone on to the west coasts of Scotland, Wales, and Ireland, and possibly also many may have passed on into Spain. Then we say it is a bad season in England for woodcocks, but that is merely because we beat our coverts after the bird has flown. Still, possibly the best season for woodcocks in England is that which most favours the killing and also the preservation of the birds, if that is not paradoxical. When they are found all over the country in mild winters, they

escape the guns for the most part, because their even distribution does not favour their being looked for of set purpose.

Comparatively few are killed in the pheasant coverts, even if many are seen. The guns are set in the line of flight of the pheasants, and whatever set purpose a migrant woodcock may have by night, his only purpose by day is to have no purpose at all. You can never trust him to go a hundred yards in any one direction, and for this reason he offers more chances to the beaters, who have no guns, than to the sportsmen who have them. On the contrary, when the frost comes early and drives the birds to those shores that know the Gulf Stream, then the woodcocks congregate in coverts, and are made the special objects of the sportsmen's attentions. The longer the frosts and snows last the more 'cock are killed, and sometimes it happens that a stay is made to these exterminating proceedings by the abject poverty and weakness of the birds. This has occasionally been the case in Ireland, and the fact that these birds were caught by frost and snow on one side, and by the Atlantic on the other, shows that migration is not always salvation to the migrant. Just why the birds became so weak as not to be able to go forward to Spain or Africa, it is difficult to say. But possibly those that get starved in this way are the late arrivals that find themselves weakened by much flying when they first arrive on the Irish coast, and without food can go no farther. Probably those already there when the food begins to get scarce do go on.

Whether the woodcock are generally increasing or not, no doubt there are more home breeding 'cock than formerly. There is scarce a boggy birch wood in Scotland that has not its young woodcock in August, and obviously these birds are bred there. They are not then much good for the table, and if sportsmen would make a rule not to shoot them they would probably increase much faster than they do. Most of the foreign woodcocks come to us in October and November. Then they appear to settle to rest on the first land they see, but they are to be found there only for a few hours, and go on and distribute themselves over their favourite country very quickly.

The sea walls and sea banks, especially when rough fringed with grass, are favourite places for these new arrivals, which in Lincolnshire are in good condition when they first come in, but are said to be poor and weak on arrival on the shores of Devon. In Ireland the first arrivals, and the majority, settle on the extreme north. Next in proportion, lighthouse information shows, they arrive by the west coast. The snipe also arrive mostly from the north, but the jack snipe come in largest numbers to the south-east coast of Ireland. This points to the conclusion that woodcock arrive mostly from Scotland, and it is suggested that those which breed farthest north first move south by stress of weather. It is also suggested that our home-bred woodcock do not remain in the winter, but move late in August or early in September. These contentions are evidently conflicting, and it is probable that the first is right, and that our home-bred birds remain where food and shelter is plentiful, and only move when they are not. The absence of home-bred birds in certain coverts in September has often been noted after they have been constantly observed in August, but this can often be accounted for by the springs running dry in the latter part of August, and available food being consequently scarce. The old birds are said to moult in September, and if this is correct it is a very good reason why they should be difficult to find then; and if this habit is invariable, it would be clear evidence against the home-breeding birds migrating in that month.

It appears that woodcock can be encouraged by planting in suitable places, and that this encouragement is not only to the migrants, but induces more birds to remain and breed here. The increase of the latter habit has been a startling and pleasing fact in natural history. Its originating cause is not known, but that an enormous increase has taken place is freely admitted. As the birds themselves have started this habit, it appears that it is only necessary to spare large numbers of these natives to still further increase the number of home-breeding 'cock.

But no way of distinguishing them when on the wing seems

to be possible, although most useful work has been done by the Duke of Northumberland, at Alnwick, in placing a metal ring round a leg of all young woodcock found there. Amongst other things thus established is that the movements of birds seem to be governed by no law capable of definition. For instance, a bird bred at Alnwick has been shot in the Highlands of Scotland, whereas others have been shot in the extreme south of England, and another in Ireland. But the strangest part of the story is that most of them do not appear to have been shot at all. Perhaps in that fact may lie the explanation why the home breeding of woodcocks increases.

It has been said that coverts devoted to pheasants save the lives of many 'cock, but it is also said that these birds do not like coverts in which there are many pheasants. It is suggested that the pheasants eat all the food, such as insects and worms, to be found under the dead leaves. There appears to be very little in this contention. A woodcock in covert is generally a woodcock asleep and not feeding. When flushed he is as foolish as a daylight owl. But in hard weather, when he has been unable to get enough food by night, and is compelled to feed in the daytime also, and when you find him on the brook-side, he is no fool then, and can fly as quickly as a snipe, and is as much on the alert. The difference in manner proves that the woodcocks are very rarely feeding when flushed by the beaters. In Ireland and the west of Scotland the warm heather-clad hills hold the woodcock more than the coverts do, until the birds are driven by snow or hail to the woods. Rain and mist will afterwards drive the 'cock out of the coverts and back to the hills, but it is thought that at Ashford fewer go back to the heather on each occasion, so that the longer shooting is delayed in January the more birds there are in those coverts.

Woodcocks lay four eggs; they pair, probably have two broods each season, and they are in the habit of carrying the young birds out to the feeding-grounds. They hold them by various methods: sometimes they clasp them to the breast by the pressure of the bill, sometimes they clasp them between the legs or thigh. One woodcock has been seen to

carry two young birds together, one by each of the methods described.

Probably no bird gives a more easy shot than a woodcock, and at the same time none is so often missed. The reason may be that shooters are inclined to shoot at twice the distance (at what they consider the "come-by-chance") that they fire at the game bred on and by the estate. They are also frequently a little excited by the cry of 'cock, and besides this, the birds have a queer habit of twisting round any tree trunk or bush that happens to be near. These side darts are made with a good deal of pace, even by birds that have been flying like owls. They seem to be the outcome of sudden impulse; it would not be correct to call them sudden resolutions, because whatever they are due to they are liable to constant change. These twists are often at right angles to the previous flight. The birds seldom go far in one direction, but have often been known to take a flight of half a mile, with several of these right-angle turns in it, and to settle after all within a few yards of the place whence they were flushed.

The shooting of the woodcocks over setters or spaniels in the heather is extremely pretty work, but only a dog experienced on this kind of game is of much use. In covert the woodcock is rarely shot to spaniels, except in South Wales. The usual plan is a party of guns and beaters, and Lord Ardilaun hardly ever uses canine retrievers. The rocks make marking essential, and it is found that good markers are preferable to good dogs in ground so rough as to be difficult for the latter.

Bags of woodcock at Lord Ardilaun's place have very frequently been misstated. Possibly the most "authoritative" mistake is in *The Snipe and Woodcock*, by Mr. L. H. de Visme Shaw, who says that in one day 508 'cock were obtained at Ashford. That is not so. Lord Ardilaun very kindly informed the author that 205 'cock was his best, but he explained that he was away from his game book at the time he wrote, and it is very likely, therefore, that Mr. R. J. Ussher is right in giving 209 'cock as the record for one day there. The 205 'cock were killed in January 1895, and at that time there were 508 'cock

killed in six days by seven guns. The big day was January 25th. Although not in a day, in a season, more 'cock have been killed at Muckross, near Killarney, than even at Ashford, or than anywhere else in the United Kingdom.

Several people besides the artist Chantrey have accidentally killed two woodcocks at a shot. Possibly it was never done by design.

Probably the best single day's bag in England was that of 101 birds in Swanton Wood, on Lord Hastings' Norfolk estate.

BLACK GAME

THE season for these birds opens in the North on 20th August, and in the South on 1st September. They have been lately exterminated in the New Forest and in Norfolk, and have long since disappeared in most of the counties south-east of Staffordshire. In Salop and Wales there are a few of them, as there are also in Devonshire and Somersetshire and in all the northern counties. They are and always have been absent from Ireland, but are found throughout the Highlands and the border counties, and are far more numerous in Dumfriesshire and Selkirkshire than elsewhere. Probably the species is decreasing in numbers everywhere, except in isolated patches of country where they are especially preserved. They are found throughout North Europe and North Asia, but in the Caucasus there is a second and only other species, which is smaller, and in which the cocks are blacker, than in our species. A peculiarity of black game is that the cocks do not acquire the lyre tails until the third year, although the hens are said to be fertile in the second year. The white under the tail of the black cocks is flecked with black until the bird grows old, when the black gradually disappears. It is not at all uncommon to see beautiful word painting detailing the glories of the lyre tail, amongst other beauties, on 20th August, but this is not painting from nature, for neither old nor young birds have the lyre tail at that time. The old birds are then in full moult, and although they can fly as well as ever, they lie to dogs then as at no other time of the year, except in July and the earlier days of August. No one would wish these old stagers to be shot then, where they are numerous enough to afford driving later in the season. But

ladies only were cause of the saving of the city, and delivering themselves from the instant danger of the war. Whereupon the senate ordained that the magistrates, to gratify and honour these ladies, should grant them all that they would require. And they only requested that they would build a temple of Fortune for the women, unto the building whereof they offered themselves to defray the whole charge of the sacrifices, and other ceremonies belonging to the service of the gods. Nevertheless, the senate, commending their goodwill and forwardness, ordained that the temple and image should be made at the common charge of the city.

(From the *Life of Coriolanus.*)

THE FLIGHT OF ANTONY

So when Antonius had determined to fight by sea, he set all the other ships on fire, but threescore ships of Egypt, and reserved only the best and greatest galleys, from three banks unto ten banks of oars. Into them he put two and twenty thousand fighting men, with two thousand darters and slingers. Now as he was setting his men in order of battle, there was a captain, a valiant man, that had served Antonius in many battles and conflicts, and had all his body hacked and cut: who, as Antonius passed by him, cried out unto him, and said: O noble emperor, how cometh it to pass that you trust to these vile brittle ships? What, do you mistrust these wounds of mine, and this sword? let the Egyptians and Phœnicians fight by sea, and set us on the main land, where we use to conquer, or to be slain on our feet. Antonius passed by him and said never a word, but only beckoned to him with his hand and head, as though he willed him to be of good courage, although indeed he had no great courage himself. For when the masters of the galleys and pilots would have let their sails alone, he made them clap them on; saying to colour the matter withal, that not one of his enemies should scape. All that day and the three days following, the sea rose so high, and was so boisterous, that the battle was put off. The fifth day the storm ceased, and the sea calmed again, and then they rowed with force of oars in battle one against the other: Antonius leading the right wing with Publicola, and Cælius the left, and Marcus Octavius and Marcus Fusteius the midst. Octavius Cæsar on the other side had placed Agrippa in the left wing of his army, and had kept the right wing for him-

in the heather, until they are sure there is not. But black game offer very easy shots, and consequently sportsmen rather despise them in this early stage. Then, on a sudden, a total change comes over the young birds, as it were in a night, and they are transformed into birds as wary as wild geese, and sit up on the hillocks to watch for danger. After that they must be stalked, driven, or left alone.

Stalking black game with a rook rifle is nice sport—infinitely more difficult than stalking red deer. With the shot gun it is still harder, because of the necessity of a nearer approach. But difficult as it is, the author once knew of a most extraordinary stalk. Two guns, unknown to each other, both stalked from different directions the same black cock on his fir tree; both, by luck or judgment, got up to the game; each fired at the same instant, and when the game fell, each unaware that the other had shot, claimed the bird. If that sort of thing can be done, it cannot be very difficult. But probably it never happened before or since, and as a matter of fact it is difficult to stalk black game.

If these birds were really plentiful they would be the most valued of all our game birds for driving. Probably there is not a pin to choose between their pace and that of grouse when coming down wind. The author has watched them coming to the butts together for half a mile, and the only difference was that the black cock were two storeys higher than the grouse. That shows which would be most appreciated by sportsmen, who are never happy unless they are accomplishing the difficult. But they are too few to drive separately in most places, and do not drive well with grouse. It would have been no uncommon thing had those third-storey birds turned back in the air and gone off over the drivers' heads while the silly grouse were facing the music of the butts and dying in clouds of smoke, for this reference is to black powder days. Your black game can think in the air, like the wild ducks, and they can also fly into a wind about as fast as with one, again imitating the marvellous and unexplained power of some wild fowl, especially the teal. Pheasants, partridges, and grouse are creatures of the wind

more or less, and pretty difficult to turn when the wind has got them, but not so your black game; they smell danger from afar, often only suspect it, but as they are like wild ducks, not slaves but kings of the wind, they will act upon their suspicion, because it is nothing to them to beat up against a wind, and besides, they are careless how long they fly. You cannot drive wild ducks, nor pigeons, nor black game, if they suspect your purpose. But when things are well managed they give great sport. Usually they will not, like a grouse, almost knock your cap off by rushing past your butt too near to shoot. They will be well up and look to be going easy. There they deceive, for they will be coming quite as fast as grouse if it is down a moderate wind, and if up wind very much faster, so that the lead, or allowance, and swing required is far more likely to be under than over done.

The author has taken part in killing 40 brace of black cock in a day, with no more excuse than that it was good for the dogs; but the kind of shooting in which anyone may be proud of a good score is in driving. Then the shooters have every right to gratification, but the drivers have far more. Late in the season, when black game are fit to drive, they sit up in the fir trees to look out for the enemy. They are so still in the dark Scotch pines that you may not see a bird as you go to take up your stand, but possibly the quarry has been watching all the time, and has observed not only the shooters but the drivers. Then your black game will probably be able to get away by the flanks, or if not, like the wild ducks, they may remember that there is always room at the top. In other words, they have the habits of game birds in August and of wood pigeons and wild duck in October. They are only unsatisfactory because the young birds are too confiding to shoot, and the old ones too artful to get shot.

The Duke of Buccleuch has had great sport with black game on his Drumlanrig Castle estate, but his best years there were a long time ago; the birds have been gradually growing fewer ever since. His very best year was in 1861, when 1586 black game were killed. This total upon an estate of more

than 150,000 acres, although the largest, is nevertheless very small when compared with grouse and partridge bags over estates of one-tenth the size. Apparently the black game do not lend themselves to great concentration of breeding birds, or if they do, their fertility does not seem to be very great. Besides, concentration for shooting is extremely difficult, as is proved by the biggest bag ever made in a day. At Sanquhar, in Dumfriesshire, the late Duke of Buccleuch, with the assistance of eight other guns, once killed 247 black game in the day, of which over 200 were black cocks. This is probably the record day's bag for Scotland or anywhere else, but it is noteworthy that it is only about one-tenth the number of grouse that have been killed in a day, and we may fairly say that the art of preserving black game has to be discovered, as also has that of introducing the bird into country new to it, which is only saying the same thing in other words.

The author has shot black game on Dartmoor and in Caithness and in most of the intermediate counties where they exist. Everywhere he has noticed a too great number of black cocks in proportion to hens, and as polygamous birds they should be treated like pheasants in this respect. The other point most noticed is that not more than a quarter of the grey hens breed. There is reason for this, and if it could be discovered, probably black game might be reared in numbers equal to grouse. The author merely speculates when he says that the excess of cocks has something to do with the trouble, but probably a worse fault still is that the old birds of both sexes are not shot, and the young ones are. There is no greater mistake than to believe that driving is an automatic selection of the old birds for destruction. This is far from the case in grouse shooting in Scotland, although in Yorkshire it is different; but your old black cock and grey hen carry years of wisdom to the topmost branch of the Scotch pine, and from that vantage post meet human strategy with avian tactics—and live to fight another year.

It is a great pity that someone does not take up the black game question and study it thoroughly. There are hundreds

of thousands of acres of bracken, pine, and rush ground in Scotland, England, and Wales that have no sporting value. They are too high for pheasants and partridges, and do not grow the right food for grouse. The result is that they are useless, but are nevertheless natural homes for black game, and are so much appreciated that bachelor black cocks will inhabit them for years, as also will a few old grey hens that do not breed, and the probability is that they keep off all the breeding birds.

The grey hen lays from six to ten eggs on the ground. They are of a yellowish shade spotted with darker colour of brown or orange-brown. The playing-grounds and manners of the birds in love and war are best described in Booth's rough notes, and best illustrated in Millais' game birds and shooting sketches. However, both seem to suggest that all the birds in the neighbourhood meet on one playing-ground. This is not so, and there are sometimes and probably always several simultaneous tournaments in very near proximity.

The black game has feathered legs but not feathered feet, as has erroneously been stated.

These birds have been successfully introduced, and have bred for some years, at Woburn Abbey. Capercailzie have also been added to the birds of England by means of their successful introduction in the woods of Woburn, by the Duke and Duchess of Bedford.

The extermination of the pheasants on one part of the Duke of Buccleuch's estate has been followed by the return of black game. This may prove that black game are driven away, but does not account for their general decrease. Pheasants exist in numbers in so few places compared with the Scottish barren area that once carried black game. This driving forth should have added to the stock elsewhere, but where has this occurred? In a very few places some recovery has been brought about by much attention, and a special effort has also been made to kill the darker coloured hens. Grey hens more seldom than most other game birds partly assume male plumage. Thus it may be difficult to select the old. Nevertheless, some people of great experience advocate this plan.

PIGEON SHOOTING

The Wild Rock Pigeon

THIS bird generally has to be shot from a boat, and usually on a sea not as steady as it might be. The pigeons live in the cliff caves, and disturbance causes them to dash out with a speed and a twist that is highly productive of sport that is not very fatal to the birds.

It is clear that there are limits to the appreciation of difficulty in shooting, otherwise these cave rock pigeons would attract all those shooters who can never get pheasants high enough or fast enough for them. But they do not. There is certainly a chance of mingling the pleasures of sport with the pains of sea-sickness, and so an excuse of a kind for leaving the wild rock pigeon severely alone.

The Wood Pigeon

In summer these birds are widely distributed through nearly every wood in the country, and the majority of the large flocks we see in the winter come from abroad. Summer gives shooting to anyone who has patience to wait for a very occasional shot, but in winter great sport is to be had wherever the big flocks are found. These flocks often number many thousands of individuals, and do not visit the same spots every year. The attraction is always food: acorns, clover-fields, and turnip-fields are most attractive. If left alone, the pigeons would soon clear a big field of every blade of clover or of every turnip leaf. In ordinary weather they are very wild indeed,

and must be attracted to the hidden shooter with decoys of kinds. But in hard frost, when there is some frost fog in the air, through which the birds look as big as barndoor fowls with their puffed-out feathers, they are almost careless of man or gun. At least, they are so occasionally, and in such circumstances the author has shot lots of them from the roadside hedge without any concealment, but by merely walking along and shooting those which rose nearest to the fence. Another way of shooting them is to wait for them to come in to roost. The latter gives a few very sporting shots, but neither plan is likely to give great sport, and the best is undoubtedly to be had only by the double means of the use of decoys and a constant and simultaneous disturbance of the pigeons in all the coverts of a neighbourhood by a number of guns.

In this way the birds are kept upon the move all the time, they are attracted to your hide by your decoys or dummy pigeons, and many times over 100 and sometimes over 200 pigeons have in this way been killed in one day by a single gun. The shooting is all the harder because of the necessity of shooting from a shelter, except in snow-time, when occasionally a white nightshirt is a good substitute for any hide, and the gunner may stand out in the open unobserved by the birds. Very tall bamboo rods are useful to fix up dummy or stuffed wood pigeons, *head to the wind*, on the tallest branches of the trees near by the sportsman's hide. Others can be placed upon the ground to give additional confidence to the coming birds. Even better results can be obtained by the use of one or two live decoys on the ground amongst the dummy or stuffed birds.

A live decoy is best used on the principle of the "play bird" of the bird-catching fraternity. He is made to rise from the ground occasionally, so that he flaps his wings and settles again. This is done by the pulling of a string which is fastened to the pigeon and works over a lever. Anything in the shape of a couple of sticks placed some yards apart, with the string fastened to the farther from the shooter and running loosely over the top of the nearer, will answer the purpose of hoisting up the pigeon 4 feet or a yard. In tying it to the running string

between the two sticks, it is necessary so to arrange as not to impede the wing movement and not to turn over the bird in flipping it upwards. It is not the rise that must be looked to for attracting wild ones, but the natural way the bird settles after it has been flipped into the air. This will be seen much farther away than the dummies on the ground, or even those in the trees, but it is not so much because of the distance whence it is seen as because of the confidence it begets that it is the best form of decoy. In this sport the quicker one shoots the better, because there are always more birds coming, and if you wait they may get near enough to hear the shot, or even to see the smoke, after either of which those particular birds are lost for the day. The best position for a hide is in the fence of a covert, near to not very tall trees on which dummies can be placed, and where the adjoining field affords food—for choice, a turnip or a clover field.

The shooting at settling pigeons as they steady themselves is child's play, but the ambitious gunner need not wait for this, and will have plenty of opportunities of being dissatisfied with his own skill. If there should be big hawks about, as described by Lord Walsingham of one of his famous shoots, the gunner is likely to realise that even wood pigeons can emulate the twisting of the snipe and the speed of a down-wind grouse, and do it all at one time.

It may be asked whether wooden dummies are likely to take in the live birds. There is no doubt about that, if they are set head to wind, as the real thing always sets himself. Moreover, it has occurred that a peregrine has so much mistaken the nature of these imitations as on one occasion to dash at one of them, hurl it yards away, and suffer himself to become a gunner's substitute for the tardy quarry, and so to gaze out of a glass case ever after as a warning to rash and greedy humanity.

The author believes that Mr. Mason of Eynsham Hall, who now has Drumour in Perthshire, holds the record for a day's wood pigeon shooting. He is not very certain of the score, but believes it was 253 birds, if memory is reliable.

THE MODERN SHOOTING SCHOOL

TO be "clay bird" shooting was the natural corollary to the once notable exploits of Dr. Carver with his glass balls, and the still more thrilling exhibitions of Buffalo Bill and Annie Oakley. After all, there was nothing really wonderful in these performances. It did not require much skill to break a glass bubble with an ounce and a quarter of No. 8 shot from a 12 bore—575 pellets—nor one-third of an ounce of No. 10 shot from a 320 repeating rifle with the rifling bored out.

It is a remarkable fact in connection with these rifle feats that a stray bullet was never known to have hit anybody in the audience, or outside of it.

The original clay bird was really made of clay and was in colour terra-cotta. The trap and bird were the invention of one Ligowsky, and were introduced into this country by Messrs. Leobe & Co., who transferred their agency to Charles Lancaster of Bond Street. There is practically little difference in the present bird and trap, except that the "bird" is now made from pitch and a few minor improvements have been made in the trap. The terra-cotta saucer was harder to break, but it had this advantage, no shot ever went through without splintering it, whereas with the pitch "bird" one or two pellets will go through it without stopping its flight, only to be recorded as a "miss." In time this form of trap shooting was taken up by the Gun and Powder Trades, and many Clay Bird Clubs were founded under the auspices of the Inanimate Bird Shooting Association. They flourished exceedingly for a time, but to be brief there was too much—yes, by far too much—of the

trade element about them, and the catastrophe which followed the tournament between an American and English team considerably damped the enthusiastic fires of " British Clay Bird Shots."

Every gun-maker of note thereafter had his own shooting-ground, properly designated a school. These institutions have not only served as a school for gun experts, but for visitors alike. Perhaps the most valuable adjunct is the high tower from which the targets are projected. They afford excellent practice at overhead birds, but this fact has to be remembered, that whereas a clay bird gets its initial energy at the trap and slows down, whilst the live bird increases its speed when on the wing. The conditions between the two forms of sport and practice are therefore not quite equal.

Again the " bird " projected from the trap follows the course and elevation prescribed by the trapper. The clay bird does not swerve or turn as a live bird will. When a clay " bird " is invented that will twist and turn in the manner of a live one, then inanimate bird shooting will gain enormously in popularity.

At some schools patches are set out and covered with heaps of thorns, faggots, and other brushwood to afford practice at " walking up " game. Traps are concealed in the bushes, and the trapper walking in the rear springs the clays from some unexpected source.

These patches could be made more effective and certainly more attractive if the plantations were real, and further, if starlings, the most beastly of all the feathered tribe and carriers of disease amongst others — it is alleged foot and mouth disease — could be trapped and released in these practice grounds; wood pigeons — another pest to the farmer; starlings might also be included, but under The Wild Birds' Protection Act, passed for the gratification of persons who, both rightly and wrongly, love all birds—wrongly, because there is no sensible discrimination, this suggestion is at the moment *ultra vires*. Yet many of these people do not seem to be greatly affected or shocked when they see the domestic

A GOOD STANCE

WALKING UP

cat torture a feeble little mouse; nor do they object to the said mouse being caught in a trap and released for the sport and enjoyment of Mrs. Tabby.

Ordinary trap shooting, that is, walking up and down the line, can scarcely be described as attractive, except to pot and spoon hunters, but to non-competitors two hours of it must be woefully boring—unless, of course, one is surrounded by jovial companions. Matches could easily be arranged for walking up competitions. In this way sport and practice could, and I add the word would, be more frequently indulged in during the close season. A clay bird made to perform an erratic flight would add to the enjoyment.

DEER IN SCOTLAND

THE kind of rifle best suited for red deer in Scotland is a double .303, .256, or .275. These weapons with a hollow-fronted or a soft-nosed bullet can be made to expend all the impact energy within the body of a deer, whereas if hard the bullets would pierce a stag from end to end and possibly do him no immediate damage. Magazine single rifles would be almost as effective if they were not noisy in loading, and single loaders are slow, but almost as extremely moderate in price as the latter. The sporting range for a stag before the express rifles was from 40 to 100 yards. The express increased the range at which a true sportsman would risk a shot up to 150 yards, and the high velocity rifles named above are doubtless as deadly at 250 yards as the Henry rifle was at 100 yards. The flat trajectory of a rifle giving an initial velocity of from 2000 to 2400 feet per second is of even more importance than the latter's greater energy of impact, for deer are very easily killed if hit in the chest cavity by an expanding bullet, as those are which are soft-nosed or hollow-pointed. The latter is much the better principle for deer, because expansion is then caused as much by striking the soft flesh or the skin as it is by striking a bone. The cause of the expansion in the latter case is hydraulic pressure, increased with the velocity of the bullet, through the 87 per cent. of water of the deer's flesh.

Deer forests vary in value even more than they do in rentals. Many of them are let from year to year with "limits" of stags set by agreement. When, as often happens, these limits are so high that the forests cannot produce as many

A SCOTTISH DEER HEAD OF UNUSUALLY HEAVY BEAM—
A THIRTEEN POINTER

A FINE WILDLY TYPICAL NINE POINT SCOTTISH HEAD OF 38 INCH SPAN

A TYPICAL SCOTTISH RED DEER HEAD, THIRTEEN POINTS

FROM A PHOTOGRAPH : MRS. SMITHSON

A TYPICAL NEW ZEALAND ROYAL HEAD

good deer, the yearly tenants possibly shoot bad stags, and make up their number in this way. These bad stags are mostly young beasts which ought to come in for the rifle of some future tenant. So are prospects ruined by the "limits" that ought to improve them. Forests of this character are well known, and only find tenants amongst the uninitiated, who are too proud or too busy to ask for information.

On the other hand, where forests are let on lease or kept in the hands of proprietors, a totally opposite system of "nursing" sometimes goes farther than sporting sentiment approves. At one time, deer wire was much resorted to in order to keep the fat winter-fed stags at home. But a park stag has no sporting value, and so the wire has to a great extent been abandoned. But feeding by hand is increasing. The fact is that there are more deer than the forests will support both in winter and summer, and deer that are fed get as tame as calves in the winter. In the autumn the shooter will not be able to detect this result of hand feeding, but he is very likely to hear of it, or even to see pictures taken of the wild deer herd playing in the presence of the camera. This is calculated to lower the values of deer forests, as the idea of the red deer's wildness is reduced.

Much more might be done than has been attempted by introducing fresh blood from the Caucasus, where the stags are as big as wapiti, and in the Carpathians cross freely with the Western sort to be found in Scotland. The two varieties meet naturally in the Carpathian Mountains. The wapiti second crosses are not considered successful. They are wapiti without the size, and red deer without the antlers. But some of the first crosses have been fine beasts. Crossing is rather out of favour in Scotland, because park deer were used for the purpose, and park deer are supposed to introduce domestic habits and appearance. But in the wild high altitudes of the Caucasus is a race of deer as wild, as hardy, and twice as big as those of Scotland, and also they have splendid heads, out of all proportion more massive than the Scotch stags' heads.

His Majesty the King prefers deer driving to stalking.

Deer stalking is a young man's sport, except where the hills and hill paths enable deer ponies to go almost anywhere. But stalking, and not driving, is the sport of the Highlands, probably as much because driving deer is helping one's neighbours as for any other reason. The paintings of deer drives that one still sees many engravings of are for the most part fancy affairs. Deer generally move slowly, and not like race-horses. In going through a pass they usually travel at a pace they intend to keep up for five or ten miles. They may rush sometimes, but the author believes that this artistic idea had its origin in the time of the deerhound. The Scotch manner of finding deer is by "spying" with the telescope. The Continental manner is by listening for the "roar," or love challenge, of the stags in the deep woodlands where "spying" would be impossible. Consequently, the woodland deer of the Continent is shot in the rutting season, unless he is driven. In Scotland, leases make the season terminate by the end of the first or second week in October.

The sight of deer is remarkably sharp, but they trust much more to their olfactory powers for protection, and they generally take a couch where their eyes protect them from the down-wind enemy and their noses from the up-wind approach of a foe. Then they prefer to travel up wind. A novice may succeed as well as an old hand if he can shoot and judge distances, because as a novice he will never try to stalk a stag for himself. That higher sportsmanship is to be learnt with years, but at the beginning the professional stalker is as necessary as the rifle itself. To protect him, it has been said that the deer trusts most of all to his sense of smell, next to that of sight, and lastly to that of hearing. Probably at the same stalk it is not very uncommon to observe both sight and hearing mislead the stag into danger, and smell to put him right. The author has fired at and missed a stag, which started away from the sound, saw the splash of the bullet beyond him, and, trusting his sight before his hearing, rushed back towards the shooter; then he has got the scent of the latter, and thus known all about the situation in an instant.

TYPICAL STAG OF TEN POINTS, SHOT IN KASHMIR BY COL. SMITHSON

A STAG OF THIRTEEN POINTS, SHOT IN KASHMIR BY MRS. SMITHSON

The echo may often confuse stags, and so make them mistrust their own sense of hearing. They will often apparently gaze at a man in full view of them and appear not to see him unless he moves. The very slightest movement is enough. But although the wind in the corries often plays curious tricks in warning a stag that is apparently safely up wind of the stalker, it is doubtful whether it ever plays tricks against the stag and sends him back into the arms of the stalker, as a splash from a ball in the water does sometimes.

It may be remarked that since the Government have cut down the .303 to 25 inches, instead of its previous 30 inches, it makes a very fair stalking rifle, although it is no longer the arm of precision it was at long range. In order to maintain the velocity, they have been obliged to cause more pressure in the chamber by altering the shape of the "lead," or leading passage for the bullet, from the chamber to the bore of the rifling. If, however, they have been able to do this by this means, what could they not have done by applying the same improvement to the long barrel! Only in the last year before its condemnation, the latter had been discovered to be the best barrel in the world when properly loaded. But it required a bigger charge than the Government ever gave to it. Messrs. Kynoch claim a great improvement for this rifle by the discovery of their axite powder, and with all these improvements there seems now to be no reason why the sportsman in ordering new rifles should be satisfied with any less flat trajectory than that given by the Mannlicher with its initial 2350 foot-seconds velocity. The author will not discuss trajectories in this work, because he has reason to question the accuracy of the text-books, including the last issued by the Government; and it would be clearly unwise to challenge criticism here, without having the space to enter fully into the matter.

BIG GAME

AS we have nothing bigger than a red deer in a state of nature, all the big game has to be looked for abroad. There is really no country which can easily and quickly be reached where big game is to be shot. Somaliland and British East Africa probably afford the best chances for African species, Wyoming the best for wapiti in the United States. India and the adjoining countries is now, as it always has been, the greatest big-game shooting arena in the world. It might have been challenged by South Africa in the days of Gordon Cumming, but that district was soon shot out by the Boers. However, South Africa at that time will for ever remain a lesson to game preservers. It swarmed with an enormous variety of big game, against the increase of which the unmolested lions and other beasts of prey were powerless for harm. They had no effect whatever in restricting the increase of buffalo, antelopes, and zebra. Yet the fashion inclines to believe that a few peregrine falcons would seriously damage the stocks of grouse in Scotland and Yorkshire. Probably, if the truth were known, there were as many grouse in Scotland before anyone ever thought of killing vermin as there are now. It is very often forgotten that vermin eat vermin as well as other creatures.

The question of rifles for big game would occupy more space than the whole of these pages to treat of it adequately. Briefly, it may be said that for each animal there is a best rifle, and for hardly any two species is the same weapon the best. A compromise is effected by using different bullets for the same rifle, and the principle on which to choose weapons is to go for a

thoroughly effective weapon for the most important species to be hunted, and by altering the bullet make it do moderately well for other less important beasts. In hunting for elephants and buffalo, it is necessary to be able to stop a charging beast with a temple hit. Both the elephant and the buffalo of Africa are particularly hard to bring down with a forehead shot, or they were before the days of high velocity rifles of from .500 to .600 bore. Those of .303 bore and less are not to be trusted unless they smash the brain, and themselves smash up in the brain, and not before or after piercing it. A No. 6 shot pellet is about one five-thousandth the weight of a partridge, and has no immediate effect on the bird unless it enters a vital spot. The 215 grain bullet of the .303 weighs about one two hundred-thousandth the weight of an elephant, and yet there have been those who advise the use of such bullets for these beasts. It appears to the author, who has never shot an elephant, but has listened to all views of those who have shot them, that the small-bore men trust a great deal to the natural timidity of the big beasts, and believe that they will not charge even if they are wounded. Of course elephants differ in temper at various times more than most animals, and a charging African elephant at close quarters is possible, to say the least.

The big bore solid bullet has been displaced to a great extent by high velocity bullets of less weight and diameter but more length. These bullets are trusted to pierce farther than the old 4 bore bullet, and to give as severe a shock. The object is to do as much damage within the head as possible, and not merely to pierce it. Expanding bullets are not to be trusted for this business, because the bone of an elephant's head from the frontal shot makes all bullets tend to flatten up too much, unless they are very hard. In other words, for these hard-skinned, hard-boned animals the biggest bullet makes the biggest hole, and any expanding of the bullet tends to break it up and prevent an entry into the vitals. For soft-skinned animals it is very different. An expanding bullet is in every way preferable to a hard bullet, whether from big or small bore. The latter has a tendency to go through the animal and expend

its energy on the other side, and the former tends to flatten out and smash up large portions of the internal organs and to remain in them.

But every prospective big-game hunter will be wise to go to some of those who make it a business and a specialty to fit out expeditions, and there he will not only hear the latest views of those who have returned from expeditions, but see the very latest designs for increasing the effectiveness of rifles. If the author were going for big game, and especially dangerous game, the first persons he would consult are Mr. Henry Holland (whose opportunities of hearing the latest views of sportsmen returned from expeditions are unique), Messrs. Rigby, Purdey, Westley Richards, and Gibbs of Bristol, for the last new thing, because rifles cannot be said to have reached finality, and are being evolved and improved every day, as is also the powder to be used with them.

There is at present considerable difference of opinion as to whether .450 high velocity rifles are equal to the task of dropping an African elephant by a frontal shot.

The late Mr. Newmann believed that they are equal to anything, and he had experience; but then he may have been lucky in not having his bullet deflected from the brain by the mass of bone it has to break through. A great deal would certainly depend upon the angle at which the bullet first struck the bone. Steel cores to the bullets prevent expanding or breaking up of that part of the bullet, but not of the leaden covering, and this expansion necessarily would greatly retard the speed and distance of penetration.

It has been suggested to me that what small-bore men rely upon for personal safety is their accuracy of aim, and not the timidity of the beasts. Mr. Newmann was the chief advocate of the small bore for big game, and his book is a record of the wounding and timidity of elephants in the districts hunted by him. I have seen two bullets that both hit the same surface within half an inch of each other, one of which glanced off, and the other penetrated, so that accuracy of aim cannot control the glancing of bullets.

A VARIED BAG

Seal Shooting

THERE was some talk of a sportsman's badge being earned by the person who had killed a seal, a stag, and a golden eagle. The former is very easy to kill, but very difficult to bag. It must be shot absolutely dead instantaneously, or it struggles into the water and there sinks. It has to be caught when basking on the rocks or sands, and this generally means shooting from a boat in a sea which will not be still, so that the chances of a brain shot are not great. To shoot seals when they come up to have a look at a passing boat is to wound them generally, but if they are killed they sink. Possibly the only advantage of shooting seals is to save some fish. The salmon waiting to run up rivers are made to suffer greatly very often. The seal of our coasts is not the fur seal, and has little value when shot.

Capercailzie

This is the finest game bird we have, unless it be considered that the lately introduced wild turkeys are finer; both are the offspring of imported birds, for the turkeys never were British birds, and the capercailzie after extinction were re-introduced in the Taymouth Castle district by the then Earl of Breadalbane.

The birds do not grow in Scotland to nearly the size of those of the Continent, and fine as they are they give but little sport, and are thought to be objectionable in many ways. One of these is said to be that they eat the leaders of the Scotch pine and so ruin the trees; but it is difficult to believe this to be correct, for the leaders of the pines could hardly be reached

from any other branch but its own, and this would prove a very insecure seat for so heavy a bird. However, capercailzie are increasing in Scotland, in spite of the determination of many woodmen to keep them down. That they form a very pretty addition to a day's bag, and create the excitement that variety usually affords, is true enough. There is no place equal to some of the less elevated estates in Perthshire for variety of bag. There capercailzie, roe deer, brown hares, rabbits, duck, teal, blackcock, pheasants, grouse, partridges, woodcock, two sorts of snipe, and wood pigeons, as well as a variety of the scarcer kinds of duck, may all be killed in one day. But it is difficult to beat for the majority of these varieties of game in any one way; for instance, capercailzie and black game seem to require special methods of beating covers for them, and then they are not both likely to take the same course, as the caper can make but little headway up hill and the black game can. Where capercailzie are numerous they are very interesting to drive and shoot, for it is not easy to do either properly. But they are usually too scarce for special days in October, and in August they give no sport in their half-fledged condition. Seventy of these birds have been killed in driving in one day near Dunkeld. The hens lay from 6 to 13 eggs. The full-grown cock-of-the-woods weighs from 9 to 13 lbs. in Scotland, but is bigger in Scandinavia. The hen lays late in May, and the birds are polygamous. Linnæus gave the scientific name *Tetrao urogallus* to the cock-of-the-woods, which is known in Gaelic as Capull-coille. He is Tiwr to the Norwegian, and Tjäder to the Swede; Glouhar to the Russian, and Auerhahn to the German. These birds became extinct in Ireland about 1760 and in Scotland about 1780, and were not re-introduced successfully until 1837, although repeated attempts had been made.

The Quail

is rarely a winter resident in England or Ireland, but was so much more frequently in the middle of last century. Then, too, large numbers used to come to this country in May to breed here. They were supposed to leave in September, but the author believes that the majority left before the shooting season, as he has often found broods in the sixties which disappeared before the opening of partridge shooting.

They cannot be forced, or even encouraged, to migrate to this country. Instinct once lost cannot be re-created by any act of ours. The late King tried turning out a lot at Sandringham, where they bred, but being spared they migrated, and not one of them came back. It shows that if we had leagues in the various counties, we might greatly add to our sport by buying up the imported live quail and releasing them. If we could get Hungarian partridges at ninepence or a shilling each, who would not buy them? The quail is quite as fertile of sport and breeds as freely, and after being turned down in the spring wanders no more before breeding than the partridge that has also been turned down, but in the autumn. Consequently, although it does not always pay a single estate to turn out either, it would pay the sporting interest of a county to do it. Quail lay from 10 to 20 eggs, rear most of their young, and 10,000 of these birds can be had in the spring for about £400. That is not much for an addition of 10,000 game birds to a county in a time when each head killed costs from 3s. 6d. to 5s.; but when the chances of the breeding of these 10,000 are taken into account, it becomes a likely 50,000 and a possible 100,000 extra game birds. What does it matter that those not shot are lost to the county? They will be re-imported from Africa and Italy another season, and can be again bought alive, instead of being killed for the London hotels and clubs. We are fond of deploring the extermination of these migrants, but the receiver is as bad as the catcher, especially when he eats in the breeding season that which he professes to wish to preserve. Even on

the lowest ground of self-interest, a quail turned out in England is worth many dead ones.

The scientific name of the quail is *Coturnix communis*, and this migrant is not to be confused with the non-migratory "Virginian Colin," "Bob-white," or more truly partridge, the scientific name of which is *Ortyx virginianus*.

Quail are beautiful birds to shoot over dogs, and although they will not drive, the shooting of them over dogs can be indulged without doing any injury to partridge driving.

The Landrail

There is no better bird for the table than the landrail, but he is hardly a sporting bird. His flight is very slow, but he is sometimes missed by quick shots who have been shooting rapid rising partridges and shoot too quickly at these slow flying birds. The landrail has from 7 to 10 eggs, breeds successfully in insect-breeding seasons, and has been shot in large numbers in a single field. A little more than a quarter of a century ago, Mr. Farrer, Mr. C. W. Digby, and Alex. M. Luckham shot 24½ or 25½ couple of landrail in a field of clover-heads at the end of Nine Barrow Down, Purbeck; and in 1905 there were 26½ couple killed in the day about two miles west of this field. Sparrow hawks used to be trained especially for taking landrails, as mentioned in Chafin's *History of Cranbourne Chace*, dated 1818. In 1880 there were 211 landrails shot at Acryse Park, Folkestone, and 35 birds in one day by two guns in two clover-fields. The landrail, or corncrake, is known as *Crex pratensis*.

Teal

The teal breeds freely in this country, and only requires to be less often shot in the early days of the shooting season to multiply rapidly. In those early days it affords no sport, but becomes a wonderful flyer when full feathered. It has from 8 to 15 eggs. No captured teal can be made use of for breeding, but their eggs are easily dealt with, just as those of

the wild duck are treated. It is possible to introduce teal to a new place by placing their eggs in the nests of moorhens. The scientific name of the common teal is *Querquedula crecca.*

The Golden Plover

This beautiful bird lays 4 eggs; it breeds on all suitable moorlands in this country, but the majority of the golden plover found in winter are migrants. When they first arrive, the shooter may boldly advance to a flock upon the ground, which will often not move until within range; but the bird soon gets wild, although after a successful shot the flock will often return to see what is the matter with its disabled or dead comrades. Its scientific name is *Charadrius pluvialis.*

Roe Deer

Too frequently the roe deer is killed in August, whereas then he is never in condition. In driving Scotch woodlands for these little deer, a very few good beaters are better than a great crowd of noisy boys. Shouting and talking leads to the deer breaking back, for they are less afraid of a crowded line of yelling boys than of the silent unknown enemy which gives but an occasional tap together of two sticks. This is a more effectual plan than tapping the tree trunks. Six beaters in this way can be effective in a beat half a mile wide, and will send the deer forward, where forty shouting boys will cause all the deer to break away at the flanks, or to lie still until the line has passed, and then to "break back." The reason is probably that when the path of each boy is accurately to be gauged by the sound made, the deer know whether they will have to move or not long before the line approaches near, and consequently act just in that way which is best to avoid a known danger. But the few beaters, with the occasional tap of a stick, is something quite unknown, and the nerves of the deer cannot stand it. They are up and off long before the line approaches near, and they flee not to the flanks or back, but straight ahead,

Roe deer are as easily killed with shot guns as hares—indeed, more easily. The writer has known one to be killed with No. 6 shot at 60 yards range, and instantaneously dead, too. It seems to be causing unnecessary danger to take out high velocity or express rifles for these deer drives; and besides, with them it is impossible to make a bag of winged game at the same time. A rabbit rifle is hardly powerful enough to avoid wounding and losing deer, unless the vitals are hit with an expanding bullet, and as the roe is generally shot running, the author is not inclined to condemn the use of the shot gun as unsportsmanlike. No. 4 shot are equally useful for roe deer and capercailzie and black game, or the three principal occupants of the Scotch woodlands. Pheasants also can be equally well killed with No. 4 shot as with No. 6, and will be the better for the table by reason of the change. If a rifle of any kind is used, an expanding bullet is by far the best to avoid wounded beasts getting away. Roe deer are often condemned as inferior to mutton, but the writer is not of that opinion. Half the mutton is spoilt in flavour by the "dressings," or rather "dips," used for the protection from or cure of sheep scab—a horrible disease with a filthy cure.

The Ptarmigan

Ptarmigan are generally walked up by a line of guns when a party can all be got to ascend to the high tops inhabited by these birds, Alpine hares, and little life besides, except for the eagles, which greatly appreciate both bird and mammal. The eagle has been known to strike down a ptarmigan in the air, although it probably catches them generally on the ground. The reason why dogs are not much used for ptarmigan is that the almost constant foot scent of hares leads to false pointing or else to hunting their lines; both tricks are equally objectionable, and show that the dogs have only been partially broken, possibly in the absence of hares. In a hare country it is quite easy to have high-couraged dogs that will point hares in their seats but will not notice the foot scents. These are so seldom

seen, though, that it is best, in their absence, to walk up or to drive ptarmigan. They are in a sense the wildest of British game, but it is a wildness that induces hiding for safety rather than flight. Their protective coloration enables them to deceive their greatest enemies, the eagles and the falcons, and they naturally rely on the device of absolute stillness to escape detection by other creatures. Generally they fly away at sight of an eagle, but lie stone close when a falcon comes in view. The eagle can sometimes kill them on the wing, but this is more frequently the falcon's method, and the birds know it. In winter they change to white, and the snow affords them protection, not only because of its similar whiteness, but also because they bury themselves in it for safety as well as for food. In summer they are grey and white, showing grey from above and looking white on taking flight. It is a mistake to say that they feed upon heather; the majority of ptarmigan live winter and summer above the highest altitude of the heather. The number of birds is nowhere very great, nor could they be expected to increase very much; for the vegetation on which they mostly live is scanty on their chosen rocks, and is indeed the moss which grows on these apparently almost bare surfaces. Were numbers large, ptarmigan would be more valued as game birds, because of their greater activity in flight than the red grouse. Often they fly like rock pigeons leaving their cliff caves, and, unlike the red grouse, they frequently make very steep angle flights at a very great velocity down hill, and then they can twist and swerve and curve in a wonderful manner. To be seen at their best they must be visited in October, but it is dangerous work when a chance exists of a snowstorm. Ptarmigan are found all round the Arctic circle, although some people think the American variety a different species. The birds sold in the game-dealers' shops as ptarmigan are nearly always willow grouse — the rype of Norway. There the ptarmigan is the Fjeldrype, and in Sweden it is the Fjallripa. Its scientific title is *Lagopus mutus*. The ptarmigan is monogamous, and has from 8 to 15 eggs. Neither nests nor birds are easy to find in the breeding season, and on the

most open spaces, where there is no covert whatever, the bird frequently escapes observation; and, besides, the croak of the bird is very misleading, and will rarely assist in the discovery of the locality of origin of the voice. Probably the rocks assist this ventriloquism. Ptarmigan are not found in England or Ireland, and no farther south than the Grampians on the mainland, and Islay in the isles of Scotland. The largest bag ever made, as far as is known to the author, was the 122 obtained by the late Hon. G. R. C. Hill at Auchnashellach on 25th August, 1866. But the 142 obtained in the year on the whole of the Duke of Sutherland's property in 1880, when over 50,000 grouse were shot, much nearer shows how little sport may be expected even on good ground. Ptarmigan, in common with grouse and partridges, feign lameness to draw an enemy away from their young.

The Coot

This is an excellent bird where it is found in great numbers, but is only fitted to give much sport by driving. It rises slowly, but is fast when on the wing, flies high, and takes a great deal of killing. Colonel Hawker quite rightly advised those who would have wild fowl to preserve their coots and not to keep tame swans. Wild fowl fancy themselves secure in the presence of coots, which are most wakeful when the duck by day are much disposed to sleep. *Gallinula chloropus*, the moorhen, gives no sport, but is good training for retrievers. Linnæus gave the title *Fulica atra* to the coot. It lays from 7 to 10 eggs.

The Widgeon, or the Whew Bird

This bird breeds seldom in Scotland and Ireland, but large quantities come from abroad in the hard weather; they are the principal attraction of the punt gunner, and afford the chief profit of the decoy man. The way to find widgeon is to discover their chief food, the *Zostera marina* of the mud flats, and then wait for hard weather and the night, when they feed. *Mareca penelopes* is its scientific name.

Wild Geese

The grey lag is the handsomest of these, and the only one that breeds in Britain, and there only in the extreme north of Scotland. It goes South early, and affords little or no winter shooting in this country. In the early autumn some flight shooting and stalking are to be had in its breeding homes.

The Pink-footed Goose

This is the principal of the grey geese to afford sport; it is this species that gives such a great deal of shooting on the north Norfolk coast, but it is not found in Ireland, which is famed in winter for its black geese—the locally miscalled bernicle, *i.e.* the brent goose, which, if not now found in thousands of acres, as described in *Wild Sports of the West*, are still migrants in their hundreds of thousands.

The brent goose is entirely a marine feeder, and is consequently, along with the widgeon, the great game of the punt gunner. There are many other varieties of geese, both migrants and introductions, like the Canada goose, but they count for very little in sport in this country, whereas in Egypt, on the Nile, wonderful sport has been had with Egyptian geese, and there is a regular harvest for Canada geese in America, where as many as 200 flighting birds have been shot in a day by one gunner. The beginner in punt gunning cannot do better than buy a second-hand gun and punt, and learn from them what he really wants, which will never be quite the same for any two men. Much depends upon the man himself, whether he intends to have assistance, and whether he has also a yacht to carry him and his punt and guns abroad. As many people have started this sport who have not gone on with it, probably advertising for the outfit would be a certain way of obtaining it at small cost, even if the gun-shops were drawn blank, which is not likely at any time. To be a punt gunner, one has to place oneself at the call of the wind, at the mercy of the wave, and to become the plaything of the tide. But then revenge is sweeping, if it is not also sweet.

DISEASES OF GAME BIRDS

A FEW weeks before the *Field* induced Dr. Klein to take up the question of grouse disease and to go to Scotland to investigate, the author had prevailed upon M. Pasteur to offer to examine the disease, and it was after this was announced in the *Times* and *Morning Post* that Dr. Klein began his work. The author regretted that he did undertake it, because it just prevented the necessary grouse being sent to M. Pasteur, and that great man had a way not only of discovering bacilli but also of some way of killing them. Dr. Klein may or may not have discovered the bacillus of the grouse disease, but if so he never gave the disease to a healthy grouse, nor did he even attempt to discover a cure for or prevention from the disease, and however interesting to science his discovery may have been, it was of no use in practice. If he did really discover the cause of the disease, and if grouse are only subject to take the disease in the same manner as the creatures to which he administered his disease, then there appears no escape from the conclusion that the disease is injected under the skin of healthy grouse.

Every one knows that grouse disease generally shows signs of its coming, and yet when it really attacks a bird the latter often dies within a few hours. The author consequently does not believe that the bare legs and dull plumage associated with grouse disease always imply that the birds have the disease, but only that they are in a condition in which they can more easily take it, or have had and recovered from it. This view is supported by the fact that, after the last attack of grouse disease in Badenoch, it was noticed when the birds re-started to breed

that the young ones were well feathered on the legs and the old birds were not. What had happened to those old grouse? Had they had the disease and recovered from it, or had they only had that predisposing indisposition that causes the leg feathers to fall off and the other feathers to look dull? If they had had the disease, then it is not as fatal as Dr. Klein's experiments suggest. The chances are that tapeworm or any other parasites, or even prolonged wet summers or bad food, will predispose the grouse to the reception of bacilli, possibly by midge bites on bare legs conveying disease from the sick to the healthy. This view is supported by the fact that the grouse never get the disease, however bad their food and however bare their legs in the hard winter weather, but only when it is warm and damp and there are lots of midge flies.

It has often been said that all game birds and domestic poultry are subject to the same diseases, and it is frequently suggested that the grouse disease, pheasant disease, and fowl diseases are all one and the same. That is an extraordinary belief, because pheasant disease nearly always occurs when the foster-parents from the barn door remain perfectly healthy. These views have had a still further upset in the summer of 1906, by the fact that a large number of foster-mothers died of enteritis, but without any of the pheasants becoming sick. It is quite clear that the pheasant disease of the rearing-fields is as much a mystery as it was before pathological research began, and is one of those things that is waiting for investigation. How it is spread is not even known. Post-mortem examinations without bacteriological research are freely made, and opinions as freely offered, generally ending in a recommendation to keep fewer birds. This advice is very wisely not followed by those who want more, not less, sport. And the preservers have this in their favour, that pheasants increase in numbers every year in spite of disease. Game preservers are in these times well aware that opinions given on a mere inspection of the internal organs can neither lead to true knowledge of the cause of deaths nor even to wise suggestions of how infection may be avoided.

It is not known whether the chicks catch the disease from the breath of already diseased birds, from foul feeding on excreta-tainted ground, or from inoculation by means of fleas or other vermin. Although these points could be set at rest in a week when disease breaks out, it never has been done. It seems more likely that, as in cramps, the disease bacillus is present in soils suitable for it, and not in others, or else that some soils favour the development of the diseases in the birds. The only way known to avoid either of these diseases is to avoid the ground on which they occur, but numbers of birds do not create either disease. The perfect health usually found on the game farms proves this. There they generally have as many pheasants on 100 acres as sportsmen expect on 10,000 acres. As with grouse, the greater the stocks the more healthy the birds seem to be.

Partridges are most attacked by a disease known as "the gapes." Hand-reared birds can be dealt with more or less successfully by means of fumigation. Carbolic acid crystals are volatilised on a hot shovel within a closed coop containing the affected birds. However, this is a clumsy way of dealing with the matter, and the best plan is to move the birds that show signs of being troubled with the disorder to the woods, where they can get lots of insect food as it falls from the trees. This applies to both partridges and pheasants. In the wild state the former are most subjected to "gapes" when the weather is very hot and dry. It is not known how the worm that is the cause of the trouble gets into the air passages.

There is a large number of other diseases to which game birds are subject, but a preserver who can avoid those mentioned need not trouble about the others. That is the reason they are not mentioned in this work on Shooting.

But an additional word may perhaps be said on grouse disease. A Departmental Committee of Investigation has been formed by the late President of the Board of Agriculture to investigate the disease. One of its first acts was to issue a pamphlet to correspondents to show what had already been said and thought about the disease. None of these old faiths

are in agreement with Dr. Klein's conclusions as they stand, but it only needs one factor to be assumed to bring them into agreement, as will be seen by the following table:—

A list of supposed causes of grouse disease that are in disagreement with Dr. Klein's conclusions.	A list of supposed causes of grouse disease that are in agreement with Dr. Klein's conclusions, provided subcutaneous injection of the bacilli by an insect is assumed—probably the midge fly.
Tapeworm. Cobbold's Strongylus. Bad food. Over stocking. Bad water. Wet warm weather. Bog or floe ground.	Tapeworm. Cobbold's Strongylus. Bad food. Bad water. Wet warm weather. Bog or floe ground. The first four acting by debility to impoverish the blood and the plumage, so as to allow the midge to get at the skin, especially of the legs. The last two acting by enabling the insects to breed.

It may be remarked that it is no answer to say that tapeworm cannot be a cause of predisposition to disease, because it is always present. It is greatly more in evidence some years than in others. The author never in any other year than 1873 saw quantities of shot grouse from which tapeworms exuded in yards of entangled mass from the shot wounds of the dead birds. Then, however, they did so, and had to be withdrawn from the birds before the latter could be bagged The birds could not have been left upon the moor, because the dogs would have gone back for them. Yet with all these worms the only evidence of disease was an absence of much leg feathering. The owner of Glenbuchat has been good enough to tell the author that disease broke out there in 1872 after the shooting season, but he never before heard of any disease in that year, and as a matter of fact the grouse at Aldourie, in Inverness-shire, not far away, bred well in 1873, and only were attacked by the disease later than the shooting season of that year. But even 1874, the great disease year,

was by no means universally bad. That autumn they had a splendid crop of grouse in perfect health at Crossmount, in Perthshire. The Rannoch Lodge ground was only fair that year, but the author's party there was credited in the Scotch papers with the record bag for that season, probably wrongly, as there was not one bird for five compared with the little moor of Crossmount. 1873 was very wet in the August and September shooting season, and the writer never before or since saw so many midges as in that season. That grouse disease does not attack in winter (although many grouse die then and in the spring of various complaints) also tends to prove that the bacilli must have an intermediate host that is not in evidence in the cold weather. Then the disease is not known in Ireland and in the Lews, where the climate is mild and damp and encouraging to midge flies. But there is really no place that the midge can attack a grouse as long as he is full feathered, and in the mild climate even if there were starvation there would not be bad food. But it may very well be that the bacilli do not exist in Ireland or the Lews, and until it is proved that they do exist there it is beside the mark to set aside the evidence to be had where they do exist, only because it does not conform to that of a place where they are unknown.

For some reason that the author is not aware of, the *Field*, which commissioned Dr. Klein's investigations, seems to have thrown over his conclusions entirely. Without any remark upon the wisdom or otherwise of this course, it is necessary to show how thoroughly it disagrees with them. At random the author takes the issue of October 6th, 1906, and he finds therein these four references to grouse disease. At page 581 is stated that "pneumo-enteritis is the technical name of the grouse disease." On page 591, Mr. W. B. Tegetmeier writes: "During the present year the number of grouse that I have seen affected by disease has been unusually small, not half a dozen from all parts of the kingdom. The extension of the disease to blackcock is an interesting fact that should be known. The disease appears to confine itself almost exclusively to gallinaceous birds."

On the same page the *Field* says: "Partridges were practically exempt from pneumo-enteritis as long as they were allowed to breed naturally, but overcrowded on foul ground they will become as subject to it as pheasants." And on page 592, in reference to pheasants it is said, "The birds died from very severe pneumo-enteritis." On September 22nd, page 531, Mr. Tegetmeier has an article in which he seeks every means of discovering why foster-mothers have died of the disease and the pheasants have not died. Consequently, it is evident that the journal treats this disease as one and the same in all species of gallinaceous birds. But Dr. Klein said at page 38 of his book on grouse disease, "In pigeons and fowls the subcutaneous inoculation is not followed by any, not even a local, positive result; the animals remained lively and well." In fact, Dr. Klein failed to give the disease he had discovered to fowls or any gallinaceous birds whatever, but he said, "The most striking results were obtained on the common bunting and the yellow-hammer, for the injection of a small drop of the broth culture into the leg is followed by fatal results."

Obviously, if the *Field* is right now, Dr. Klein did not discover the grouse disease bacillus. And if he did discover it, any fowls dead from or sick with disease may at once be regarded as victims of something else; and other gallinaceous birds must be suspected in consequence of being refractory to the grouse disease.

The author's belief is that Dr. Klein did discover the bacillus, although he failed to prove it, and that his experiments on buntings, fowls, and other creatures went to suggest that the grouse is not a natural host of the bacilli, that it or its virus becomes attenuated or weakened every time it passes through a grouse, but that, on the contrary, it becomes more virulent in passing through buntings and yellow-hammers. This was suggested by the weakness of the virulence from the bacilli cultivated from the diseased autumnal grouse after a severer spring outbreak, and it is also suggested by the fact that in such cases the grouse do not die rapidly, and that it is a slow disease from which perhaps some grouse recover; whereas

they do not recover in the spring. The writer's suggestion is, therefore, that when the bacillus is carried from grouse to grouse it may be weakened, but that in spring it is not originated in the grouse, but in some creature unknown, and possibly a migrant bird of the bunting, hammer, or finch families. The importance of finding this out, and testing the attenuation theory more thoroughly in live grouse, is obvious, for if it is true that the blood of successive grouse gradually weakens the bacilli or their virus, then it is clear that the safety of grouse will be the constant presence of some few diseased grouse on the moor.

The author only dwells on this aspect because it is not receiving as much attention as some others, which are constantly being discussed, and are therefore less necessary to mention.

At present thought is mostly in the contrary direction. But it is to be hoped and believed that the Commissioners will investigate every possible view from a scientific standpoint, and more important still, from a practical one. For instance, if on a disease affected moor grouse can be kept in health in a pen of midge-proof netting, we shall hardly need to know where the midge gets his poison, but shall be exceedingly likely to dry up his breeding-places and exterminate him as nearly as may be.

There was no real grouse disease in 1907, for the destruction that extended across the South Highlands of Scotland, from Aberdeenshire to Argyllshire, in the spring of that year was the result of bad heather and parasites.

A new micro-organism has been discovered in one or two grouse, but no great importance has yet been attributed to the fact. Pigeons have died in their thousands from a throat disease, the micro-organism of which was isolated and named in Germany as long ago as 1884. No advance has been made; and if the isolation and naming of micro-organisms is sport to the bacteriologists, practical people require to know how the organisms get where they are. The naming of micro-organisms is but the alphabet of the science.

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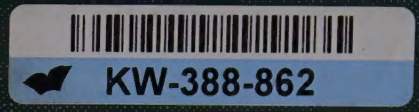
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